

Nuclear Waste Disposal

Proposed Appropriation Language

For nuclear waste disposal activities to carry out the purposes of Public Law 97-425, as amended, including the acquisition of real property or facility construction or expansion, [\$95,000,000] \$212,045,000 to remain available until expended and to be derived from the Nuclear Waste Fund: *Provided*, That not to exceed \$2,500,000 may be provided to the State of Nevada solely for expenditures, (other than salaries and expenses of State employees,) to conduct scientific oversight responsibilities pursuant to the Nuclear Waste Policy Act of 1982, Public Law 97-425, as amended: *Provided further*, That not to exceed \$5,887,000 may be provided to affected units of local governments, as defined in Public Law 97-425, to conduct appropriate activities pursuant to the Act: *Provided further*, That the distribution of the funds as determined by the units of local government shall be approved by the Department of Energy: *Provided further*, That the funds for the State of Nevada shall be made available solely to the Nevada Division of Emergency Management by direct payment: *Provided further*, That within 90 days of the completion of each Federal fiscal year, the Nevada Division of Emergency Management and the Governor of the State of Nevada and each local entity shall provide certification to the Department of Energy, that all funds expended from such payments have been expended for activities authorized by Public Law 97-425 and this Act. Failure to provide such certification shall cause such entity to be prohibited from any further funding provided for similar activities: *Provided further*, That none of the funds herein appropriated may be: (1) used directly or indirectly to influence legislative action on any matter pending before Congress or a State legislature or for lobbying activity as provided in 18 U.S.C. 1913; (2) used for litigation expenses; or (3) used to support multi-State efforts or other coalition building activities; *Provided further*, All proceeds and recoveries realized by the Secretary in carrying out activities authorized by the Nuclear Waste Policy Act of 1982 in Public Law 97-425, as amended, including but not limited to, any proceeds from the sale of assets shall be available without further appropriation and shall remain available until expended (*Energy and Water Development Appropriations Act, 2002*).

Explanation of Change

The proposed change more fully explicates the intent of section 302 (c)(1) of the Nuclear Waste Policy Act in Public Law 97-425, as amended. That section directed that “all receipts, proceeds, and recoveries realized by the Secretary...shall be deposited in the Waste Fund immediately upon their realization...”

Office of Civilian Radioactive Waste Management

Executive Budget Summary

Mission

The mission of the Office of Civilian Radioactive Waste Management (OCRWM), as established by the Nuclear Waste Policy Act of 1982, as amended, is to implement the Federal policy for permanent geologic disposal of commercial spent nuclear fuel and high-level radioactive waste resulting from the Nation's atomic energy defense activities. The OCRWM organization, also known as "RW" within the Department of Energy, implements the Federal policy for permanent disposal of high-level radioactive waste and spent nuclear fuel, in order to protect the public health and the environment. This waste must be safely isolated to minimize the risk to human health and the environment. Disposition of these materials in a geologic repository is necessary to maintain our energy options and national security, to support cleanup of our weapons sites, to continue operation of our nuclear-powered vessels, and to advance our international non-proliferation goals.

Strategic Objectives

The OCRWM Program falls under the Department's Environmental Quality (EQ) Business Line. The Program is focused on meeting the EQ Business Line Goal by meeting the DOE Strategic Objective and Program Strategic Performance Goal that has been assigned to RW. The performance indicator for the Program Strategic Performance Goal is the status of meeting RW Program milestones. As part of the strategy to meet the overall DOE EQ Business Line Goal, the Secretary has assigned one DOE strategic objective (EQ2) to RW-1. RW has identified one Program Strategic Performance Goal (EQ2-1) for that objective.

Achievement of the Strategic Objective and Program Strategic Performance Goal is contingent on a site recommendation and approval and depends heavily on funding continuity and sufficiency.

EQ2: *Complete the characterization of the Yucca Mountain site and, assuming it is determined suitable as a repository and the President and Congress approve, obtain requisite licenses, construct and, in 2010, begin acceptance of spent nuclear fuel and high-level radioactive wastes at the repository.*

This strategic objective is supported by the Program Strategic Performance Goal that follows:

Program Strategic Performance Goal

EQ2-1: *Complete the scientific and technical analyses of the Yucca Mountain site, and, if it is determined to be suitable for a geologic repository, obtain a license from the Nuclear Regulatory Commission.*

Strategy

The Office of Civilian Radioactive Waste Management will reach the end of the site characterization phase of the Yucca Mountain Project if a site recommendation is made by the Secretary to the President in FY 2002. Upon submission of the license application to the Nuclear Regulatory Commission, the Program will complete the pre-licensing phase. If the Yucca Mountain site is found suitable and a decision is made to proceed with repository development, funding for the Program will need to be reviewed and adjusted appropriately to accomplish repository construction and development of a national transportation capability.

The Program's activities are subject to continuing review by the Congress, the General Accounting Office, the Department's Inspector General, the Nuclear Regulatory Commission, the Environmental Protection Agency, the Nuclear Waste Technical Review Board, and the Department's Office of Engineering and Construction Management (OECM). During FY 2002, an external independent review by OECM is scheduled of the Program's cost and schedule baseline through license application and of the related management systems. Complementing external reviews, the Office of Civilian Radioactive Waste Management conducts quarterly, in-depth reviews of Program activities, schedules, and expenditures. The Director and all key managers and supervisors participate to ensure that activities are on-track and within budget.

Assuming that Yucca Mountain is recommended and approved as the repository site in 2002, the Department will focus the Civilian Radioactive Waste Management Program on the activities necessary to proceed with the Yucca Mountain Site Characterization Project, initiate the activities necessary for license application design and development of the repository license application, and conduct other activities associated with the Federal government's waste acceptance obligation.

The Department is engaged in continued interactions with the Nuclear Regulatory Commission, the Environmental Protection Agency, and the Nuclear Waste Technical Review Board. In addition, the Civilian Radioactive Waste Management Program collaborates on technical, policy, and operational issues with the State of Nevada and affected units of local government within the State. The Program also works collaboratively with several other nations to address common technical issues associated with radioactive waste management and disposal.

If the Yucca Mountain site is found suitable and a decision is made to proceed with repository development, funding for the Program will need to be reviewed and adjusted appropriately to accomplish repository construction and development of a national transportation capability. At the request of the House Appropriations Subcommittee for Energy and Water Development, the Department issued a report, *Alternative Means of Financing and Managing the Office of Civilian Radioactive Waste*

Management, that recognized the need for immediate action to address funding, if the site is found suitable. The report identified four funding mechanisms that could be implemented to remedy the current limitations on the Nuclear Waste Fund. The Administration would like to work together with the Congress to determine the appropriate financial ability to assure the repository program continues to be adequately funded and the nuclear waste fund is used for its intended purpose.

If the site is designated, the Administration also will seek additional funding to begin essential transportation-related activities and provide a long-term management and financing plan for the entire licensing and construction effort.

_____ Date: _____
Lake Barrett, Acting Director
Office of Civilian Radioactive
Waste Management, RW-1

Nuclear Waste Disposal

Program Mission

The mission of the Office of Civilian Radioactive Waste Management (OCRWM), as established by the Nuclear Waste Policy Act of 1982, as amended, is to implement the Federal policy for permanent geologic disposal of commercial spent nuclear fuel and high-level radioactive waste resulting from the Nation's atomic energy defense activities. To accomplish this mission, OCRWM provides leadership in developing and implementing strategies that assure public and worker health and safety, protect the environment, merit public confidence, and are economically viable.

The OCRWM organization, also known as "RW" within the Department of Energy, implements the Federal policy for permanent disposal of high-level radioactive waste and spent nuclear fuel, in order to protect the public health and the environment. Commercial nuclear power plants, which currently provide 20 percent of our Nation's electricity, have generated about 45,000 metric tons heavy metal (MTHM) of spent nuclear fuel since 1957. This amount could more than double by 2035. Since the mid-1940s, weapons production and research activities have produced approximately 380 million liters (100 million gallons) of liquid high-level radioactive waste and more than 2,500 metric tons of spent nuclear fuel. Our Navy's nuclear vessels will have produced more than 65 metric tons of spent nuclear fuel by 2035.

Some elements of this waste will remain radioactive for several hundred to several thousand years, while others will remain radioactive for many thousands of years. This waste must be safely isolated to minimize the risk to human health and the environment. Disposition of these materials in a geologic repository is necessary to maintain our energy options and national security, to support cleanup of our weapons sites, to continue operation of our nuclear-powered vessels, and to advance our international non-proliferation goals.

Program Strategic Performance Goal

EQ2-1: *Complete the scientific and technical analyses of the Yucca Mountain site, and, if it is determined to be suitable for a geologic repository, obtain a license from the Nuclear Regulatory Commission.*

Performance Indicator

Indicator: Status of meeting RW Program Milestones.

Performance Standards

Blue: Significantly exceeded established targets/milestones
Green: Met all milestones on-time and within budget
Yellow: Met critical milestones
Red: Missed a critical milestone

Annual Performance Results and Targets for EQ2-1 ¹

FY 2001 Results	FY 2002 Target ³	FY 2003 Proposed Target
! Complete the scientific and technical documents that will provide the technical basis for a possible Site Recommendation. (EQ2-1) (MET GOAL)	! Issue a Final Environmental Impact Statement as required by the Nuclear Waste Policy Act. (EQ2-1/FMFIA-nuclear waste management)	! Complete additional testing and analyses required to support license application design. (EQ2-1)
! Conduct statutory hearings in the vicinity of Yucca Mountain to inform the residents that the site is under consideration and to receive comments regarding a possible Site Recommendation. (EQ2-1) (MET GOAL)	! Finalize a Site Recommendation Report for the Secretary of Energy to submit to the President, and then to the Congress. (EQ2-1/FMFIA-nuclear waste management)	! Initiate development of the design that will be used in the license application. (EQ2-1)
! Update all process models and conduct a total system performance assessment for use in the Site Recommendation. (EQ2-1) (MET GOAL)	! Issue Nuclear Waste Policy Act Section 180(c) Notice of Revised Proposed Policy and Procedures for public comment. ² (EQ2-1)	! Initiate development of a license application for submittal to the NRC for authorization to construct a repository. (EQ2-1)
! Complete and issue Total System Life Cycle Cost and Fee Adequacy reports. (EQ2-1) (MET GOAL)	! Begin development of updated Total System Life Cycle Cost and Fee Adequacy reports. (EQ2-1)	! Issue final "Policy and Procedures for Implementation of Section 180(c) of the Nuclear Waste Policy Act, as amended." (EQ2-1)
	! Issue draft request for proposals for waste acceptance and transportation services. ² (EQ2-1)	! Develop and issue final request for proposals for waste acceptance and transportation services. (EQ2-1)
		! Complete and issue Total System Life Cycle Costs and Fee Adequacy reports. (EQ2-1)

Notes:

1. Schedule delays have resulted due to a combination of three factors: (a) RW's lower-than-expected appropriations over the past five fiscal years, including FY 2002, contributed to a cumulative funding shortfall of approximately \$224 million; (b) Additional work required to respond to technical issues raised by the Nuclear Waste Technical Review Board; and (c) Release of the Site Recommendation Consideration Report was delayed to accommodate completion of an inquiry by the Department's Inspector General.

2. Contingent on site recommendation and approval in 2002.

3. FY 2002 revisions due to \$70 million shortfall in FY 2002 appropriation includes delay in completing the safety analyses to support the repository license application.

Significant Accomplishments and Program Shifts

The Office of Civilian Radioactive Waste Management will reach the end of the site characterization phase of the Yucca Mountain Project if a site recommendation is made by the Secretary of Energy to the President, in FY 2002. Upon submission of the license application to the Nuclear Regulatory

Commission, the Program will complete the pre-licensing phase. If the Yucca Mountain site is found suitable and a decision is made to proceed with repository development, funding for the Program will need to be reviewed and adjusted appropriately to accomplish repository construction and development of a national transportation capability.

- Issue a Final Environmental Impact Statement as required by the Nuclear Waste Policy Act. [Scheduled for completion in FY 2002]
- Finalize a Site Recommendation Report for the Secretary of Energy to submit to the President, and then to the Congress. [Scheduled for completion in FY 2002]
- Issue Nuclear Waste Policy Act Section 180(c) Notice of Revised Proposed Policy and Procedures for public comment. [Scheduled for completion in FY 2002]
- Issue draft request for proposals for waste acceptance and transportation services. [Scheduled for completion in FY 2002]
- Begin development of updated Total System Life Cycle Cost and Fee Adequacy reports. [Scheduled for completion in FY 2002]
- Complete additional testing and analyses required to support the License Application design. [Scheduled for completion in FY 2003]
- Initiate development of the design that will be used in the License Application. [Scheduled for completion in FY 2003]
- Initiate development of a License Application for submittal to the Nuclear Regulatory Commission for authorization to construct a repository. [Scheduled for completion in FY 2003]
- Develop and issue final RFP for waste acceptance and transportation services. [Scheduled for completion in FY 2003]
- Complete and issue Total System Life Cycle Costs and Fee Adequacy reports [Scheduled for completion in FY 2003]
- Initiate development of a License Application for submittal to the Nuclear Regulatory Commission for authorization to construct a repository. [Scheduled for completion in CY 2004]

Funding Profile

(Dollars in Thousands)

	FY 2001 Comparable Appropriation	FY 2002 Original Appropriation	FY 2002 Adjustments	FY 2002 Comparable Appropriation	FY 2003 Budget Request ^c
Nuclear Waste Fund:					
Yucca Mountain Site Characterization	312,985	296,886		296,886	424,922
Waste Acceptance, Storage & Transportation	2,661	4,103		4,103	17,100
Program Management & Integration	12,071	18,011		18,011	19,691
Program Direction	64,914 ^b	56,000	2,278 ^b	58,278	65,332
Total, Program Budget Authority	392,631	375,000	2,278	377,278	527,045
Funding Sources:					
Nuclear Waste Disposal Account					
Nuclear Waste Fund, First Repository	127,992	39,000		39,000	146,713
Nuclear Waste Fund, Program Direction	64,914	56,000	2,278 ^b	58,278	65,332
Rescission					
General Reduction S&S					
Total, Nuclear Waste Disposal Account	192,906	95,000	2,278	97,278	212,045
Defense Nuclear Waste Disposal	199,725	280,000		280,000	315,000
Total, Funding Sources ^b	392,631	375,000	2,278	377,278	527,045
Total, Excluding Federal CSRS Retirement Adjustments	390,379	375,000	0	375,000	525,000
H.R. 4733: Restoration of Funds	10,000 ^a				
Grand Total, Funding Sources	402,631 ^d	375,000	2,278	377,278 ^d	527,045 ^d

Public Law Authorization:

- P.L. 97-425, "Nuclear Waste Policy Act" (1982)
- P.L. 100-203, "Nuclear Waste Policy Amendments Act" (1987)

^a The FY 1996 Energy and Water Development Appropriation Act reserved \$85 million in the Defense Nuclear Waste Disposal Appropriation for interim waste storage activities. In FY 2001, H.R. 4733, House and Senate Committees on Appropriation, Energy and Water Development, restored \$10 million to the Defense Nuclear Waste Disposal for activities related to the Site Recommendation.

^b The FY 2001 and FY 2002 columns include funding in the amount of \$2.3 million for each year for the Government's share of increased costs associated with pension and annuitant health care benefits. These funds are comparable to FY 2003 funding of \$2.0 million. (Note: The data is presented on a comparable basis as if the legislation had been enacted and implemented in FY 2001).

^c If the site is designated, the Administration also will seek additional funding to begin essential transportation-related activities and provide a long-term management and financing plan for the entire licensing and construction effort.

Five-Year Funding Profile

	FY 2001 Comparable Appropriation	FY 2002 Comparable Appropriation	FY 2003 Request ^a	FY 2004 Request ^b	FY 2005 Request ^b
Yucca Mountain Site Characterization					
Suitability/Licensing & Performance Assessment . . .	85,442	66,052	111,896	85,250	85,250
Core Science	65,821	71,373	71,320	70,220	70,220
Design and Engineering	73,943	71,710	128,465	181,286	123,351
National Environmental Policy Act (NEPA)	2,192	1,600	1,600	6,000	6,000
Operations/Construction	31,656	33,960	45,550	35,050	104,050
Nevada Transportation	0	0	6,000		
Project Management	34,090	32,350	40,250	34,150	34,150
External Oversight, Payments Equal to Taxes	19,841	19,841	19,841	19,687	19,687
Total, Yucca Mountain Site Characterization	312,985	296,886	424,922	431,643	442,708
Waste Acceptance, Storage and Transportation					
Transportation	520	2,415	14,172	14,672	14,672
Waste Acceptance	1,614	1,138	2,328	2,328	2,328
Project Management	527	550	600	600	600
Total, Waste Acceptance, Storage & Transportation	2,661	4,103	17,100	17,600	17,600
Program Management & Integration					
Quality Assurance	0	6,400	6,918	6,918	6,918
Program Management	6,233	6,056	7,521	9,096	9,096
Human Resources & Administration	5,838	5,555	5,252	6,078	6,078
Subtotal, Program Integration	12,071	18,011	19,691	22,092	22,092
Program Direction	64,914 ^d	58,278 ^d	65,332 ^d	66,665	67,600
Total, Program Integration & Program Direction	76,985	76,289	85,023	88,757	89,692
H.R. 4733 Restoration of Funds	10,000 ^c	-	-	-	-
Total, Program Budget Authority	402,631	377,278	527,045	538,000	550,000
Program Budget Authority:					
Nuclear Waste Disposal					
Nuclear Waste Fund, First Repository	127,992	39,000	146,713	149,335	153,400
Nuclear Waste Fund, Program Direction	64,914	58,278	65,332	66,665	67,600
Rescission					
Safeguards and Security Reduction	0	0	0	0	0
Total, Nuclear Waste Disposal	192,906	97,278	212,045	216,000	221,000
Defense Nuclear Waste Disposal					
Defense Nuclear Waste Disposal	199,725	280,000	315,000	322,000	329,000
Total, Defense Nuclear Waste Disposal	199,725	280,000	315,000	322,000	329,000
H.R. 4733: Restoration of Funds	10,000 ^c	-	-	-	-
Total, Program Budget Authority	402,631	377,278	527,045	538,000	550,000

^a If the site is designated, the Administration also will seek additional funding to begin essential transportation-related activities and provide a long-term management and financing plan for the entire licensing and construction effort.

^b The outyears shown here are preliminary, and do not necessarily reflect program requirements. Future budget requests for the Program have yet to be established and will be determined through the annual Executive and Congressional budget process.

^c The FY 1996 Energy and Water Development Appropriation Act reserved \$85 million in the Defense Nuclear Waste Disposal Appropriation for interim waste storage activities. In FY 2001, H.R. 4733, House and Senate Committees on Appropriation, Energy and Water Development, restored \$10 million to the Defense Nuclear Waste Disposal for activities related to the Site Recommendation.

^d The FY 2001 and FY 2002 columns include funding in the amount of \$2.3 million for each year for the Government's share of increased costs associated with pension and annuitant health care benefits. These funds are comparable to FY 2003 funding of \$2.0 million. (Note: The data is presented on a comparable basis as if the legislation had been enacted and implemented in FY 2001).

Projected Receipts and Funding ^a

Effective Yield

	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010
One mill/kWh Fee ^b	689	619	596	634	663	654	647	648	647	656
One-time Fee	0	0	0	0	0	0	0	0	0	0
Subtotal	689	619	596	634	663	654	609	648	647	656
Investment	638 ^c	687 ^d	752 ^d	822 ^d	896 ^d	975 ^d	1,048			
Total Income	1,327	1,306	1,348	1,456	1,559	1,629	1,657			
Program Budget Authority:										
Nuclear Waste Disposal										
Nuclear Waste Fund, First Repository . . .	128	39	147	149	153	145	150			
Nuclear Waste Fund, Program Direction .	65 ^g	58 ^g	65	67	68	70	70			
Rescission										
Total, Nuclear Waste Disposal	193	97	212	216	221	215	220			
Defense Nuclear Waste Disposal										
Defense Nuclear Waste Disposal	200 ^e	280	315	322	329	350	360			
H.R. 4733: Restoration of Funds	10									
Total, Defense Nuclear Waste Disposal . . .	210	280	315	322	329	350	360			
Total, Program Budget Authority	403	377	527	538 ^f	550 ^f	565 ^f	580 ^f			

^a Income and funding projections are subject to change based on the resolution of the 1998 waste acceptance obligation between DOE and contract holders, and prevailing market conditions.

^b The estimated fee for FY 2001-2011 is based on EIA projections as of 11/1/2001 with adjustments made for potential litigation settlements. Actual One mill/kWh fee collected through September 30, 2001, was \$689 million.

^c Estimated FY 2001 investment income consists of effective yield earnings through September 30, 2001.

^d The projected values consist of anticipated effective interest earnings on all securities from the date of purchase. DRI-McGraw Hill forecasts are used for future interest rates.

^e The FY 1996 Energy and Water Development Appropriation Act reserved \$85 million in the Defense Nuclear Waste Disposal Appropriation for interim waste storage activities. In FY 2001, H.R. 4733, House and Senate Committees on Appropriation, Energy and Water Development, restored \$10 million to the Defense Nuclear Waste Disposal for activities related to the Site Recommendation.

^f The outyears shown here are preliminary, and do not necessarily reflect program requirements. Future budget requests for the Program have yet to be established and will be determined through the annual Executive and Congressional budget process.

^g This column includes the Government's share of increased costs associated with the Civil Service Retirement System (CSRS) pension and annuitant health care benefits.

Funding by Site

(dollars in thousands)

	FY 2001	FY 2002	FY 2003	\$ Change	% Change
Chicago Operations Office					
Argonne National Laboratory	1,959	2,752	3,599	847	30.8%
Oakland Operations Office					
Lawrence Berkeley Laboratory	9,800	12,118	12,817	699	5.8%
Lawrence Livermore National Laboratory	10,100	17,149	18,029	880	5.1%
Total, Oakland Operations Office	19,900	29,267	30,846	1,579	5.4%
Albuquerque Operations Office					
Sandia National Laboratory	9,850	14,319	14,382	63	0.4%
Los Alamos National Laboratory	11,571	12,591	12,785	194	1.5%
Total, Albuquerque Operations Office	21,421	26,910	27,167	257	1.0%
Nevada Operations Office ^a					
Nevada Test Site	5,771	7,550	7,578	28	0.4%
Nevada (Yucca Mountain Project Office)	45,126	36,164	41,367	5,203	14.4%
Total, Nevada Operations Office	314,930	272,528	401,349	128,821	47.3%
Oak Ridge Operations Office					
Oak Ridge National Laboratory	491	491	491	0	0.0%
Total, Oak Ridge Operations Office	717	641	1,028	387	60.4%
Richland Operations Office					
Pacific Northwest Laboratory	742	973	1,351	378	38.8%
Washington Headquarters	32,962	44,207	61,705	17,498	39.6%
Total, Program	392,631 ^{b, d}	377,278 ^d	527,045 ^d	149,767	39.7%
H.R. 4733: Restoration of Funds (Defense)	10,000 ^c	-	-	-	-
Grand Total, Program	402,631	377,278	527,045	149,767	39.7%
Grand Total, Excluding CSRS Retirement Adjustments	400,379	375,000	525,000	150,000	40.0%

^a Includes Financial Assistance to the State of Nevada and Affected Units of Local Government and includes funding for contracts administered in Nevada (i.e., Management and Operating Contractor, USGS, National Academy of Sciences, universities, etc.).

^b The FY 2001 appropriation reflects the rescission (\$695K) and the transfer of funds (\$6.9M) to the National Nuclear Safeguards and Security organization to support safeguards and security at the National Laboratories.

^c The FY 1996 Energy and Water Development Appropriation Act reserved \$85 million in the Defense Waste Disposal Appropriation for interim waste storage activities. In FY 2001, H.R. 4733, House and Senate Committees on Appropriation, Energy and Water Development, restored \$10 million to the Defense Nuclear Waste Disposal for activities related to the Site Recommendation.

^d The FY 2001 and FY 2002 columns include funding in the amount of \$2.3 million for each year for the Government's share of increased costs associated with pension and annuitant health care benefits. These funds are comparable to FY 2003 funding of \$2.0 million. (Note: The data is presented on a comparable basis as if the legislation had been enacted and implemented in FY 2001).

Site Description

Argonne National Laboratory

In support of the Design and Engineering budget element, Argonne National Laboratory conducts waste form testing. The laboratory is also the custodian for new spent fuel approved test material.

Lawrence Berkeley National Laboratory

In support of the Core Science budget element, Lawrence Berkeley National Laboratory (LBNL) conducts unsaturated zone flow and transport modeling, thermal hydrologic modeling activities, geophysics testing, and supports drift-scale testing. LBNL also performs the seepage tests in the exploratory studies facility alcoves and niches. LBNL supports the abstraction activities needed to conduct the total system performance assessment in support of site recommendation and license application.

Lawrence Livermore National Laboratory

In support of the Core Science budget element, Lawrence Livermore National Laboratory (LLNL) conducts experiments and modeling activities needed for the repository design and to predict responses of the engineered and natural barrier systems to the heat generated by radioactive waste. The experiments include the drift-scale tests in the exploratory studies facility (ESF) and the heater tests in the cross drift. In support of the Design and Engineering budget element, LLNL conducts testing and modeling of the waste package environment, waste package materials and waste forms. LLNL also supports the abstraction activities needed to conduct the total system performance assessment in support of the site recommendation and license application.

Sandia National Laboratory

In support of the Core Science budget element, Sandia National Laboratories conducts in-situ monitoring in the exploratory studies facility and in the cross drift, and performance confirmation testing. The laboratory conducts geoengineering and rock mechanics studies, and backfill analyses in support of the Design and Engineering budget element. The laboratory also supports the Suitability/Licensing and Performance Assessment budget element with performance assessment modeling.

Los Alamos National Laboratory

In support of the Core Science budget element, Los Alamos National Laboratory (LANL) conducts geochemistry, mineralogy, and colloid transport studies. LANL conducts laboratory and field-scale transport tests, including the Busted Butte transport test, and develops radionuclide transport properties models for the unsaturated and saturated zone groundwaters at the site. LANL corroborates with the

United States Geologic Survey on isotopic and groundwater chemistry investigations needed for transport models. LANL interacts with Lawrence Berkeley National Laboratory in preparation of the unsaturated-zone flow and transport process model report, and participates with Sandia National Laboratory in preparation of the saturated-zone flow and transport process model report. In support of the Operations/Construction budget element, the laboratory coordinates testing at the Yucca Mountain site, including testing in the ESF and the cross drift. LANL also supports the abstraction activities needed to conduct the total system performance assessment in support of the site recommendation and license application.

Nevada Operations Office

In support of the Yucca Mountain Project and the Office of Civilian Radioactive Waste Management (OCRWM) Program Direction budget element, the Nevada Operations Office administers disbursement of external oversight and payments-equal-to-taxes (PETT) funds to affected units of government, and also administers contracts/agreements with the OCRWM Management & Operating (M&O) contractor, support services contracts and all other financial/contract agreements associated directly with Yucca Mountain Site Characterization Office.

Nevada Test Site

In support of the Core Science and Operations/Construction budget elements at the Yucca Mountain site, the Nevada Test Site (NTS), through Bechtel Nevada, provides NTS common site support such as: logistics, fire protection, security, emergency medical services, roads/grounds maintenance, environmental operations, vehicle/construction equipment maintenance, facility maintenance, bus transportation, janitorial and refuse services, and power usage.

Yucca Mountain Site Characterization Office in Nevada

The Yucca Mountain Site Characterization Office in Las Vegas, Nevada has the primary responsibility for the characterization of the Yucca Mountain site, and if the site is found suitable, preparing and submitting a license application to the Nuclear Regulatory Commission for construction of the repository. As the future owner and licensee of the repository, the Department of Energy develops and implements policies and strategies for the work to be completed and oversees the management and operating contractor and the United States Geological Survey in performing this work. The Yucca Mountain Site Characterization Office manages the contracts for the management and operating contractor and the support services contractors for work at Yucca Mountain.

License preparation activities include developing a description of the site; design of the repository and waste package subsystems; writing the license application; developing and implementing environmental, safety and health policies; interacting with oversight and regulatory groups; and providing the necessary management and site infrastructure to support these activities.

Oak Ridge Institute for Science and Education

In support of the Program Management budget element, the Oak Ridge Institute for Science and Education administers undergraduate and graduate educational programs.

Oak Ridge National Laboratory

In support of the Design and Engineering budget element, the Oak Ridge National Laboratory provides support in analyzing commercial reactor criticality data, radiochemical assays and uncanistered fuel design. The laboratory also provides technical support for the disposal criticality topical report, thermal/neutronics model and criticality analysis process report.

Pacific Northwest National Laboratory

In support of the Design and Engineering budget element, the Pacific Northwest National Laboratory provides waste form testing support.

Yucca Mountain Project

Mission Supporting Goals and Objectives

Project Mission

The mission of the Yucca Mountain Project is to develop a monitored geologic repository for the disposal of spent nuclear fuel and high level radioactive waste.

The FY 2003 budget request is based on the assumption that Yucca Mountain will be designated as a site for a monitored geologic repository. The Secretary's decision to recommend approval of the site for development as a repository in FY 2002 is one of a series of key technical and policy decisions that are at the core of the Office of Civilian Radioactive Waste Management's principal objective—the permanent safe disposal of spent nuclear fuel and high-level radioactive waste.

Project Goals

The Yucca Mountain Project is supporting the Departments's **Strategic Objectives EQ2**: *Complete the characterization of the Yucca Mountain site and, assuming it is determined suitable as a repository and the President and Congress approve, obtain requisite licenses, construct and, in 2010, begin acceptance of spent nuclear fuel and high-level radioactive wastes at the repository.*

To meet Strategic Objective EQ2, the Yucca Mountain Project is also supporting the **Program Strategic Performance Goal EQ2-1**: *Complete the scientific and technical analyses of the Yucca Mountain site, and if it is determined to be suitable for a geologic repository, obtain a license from the Nuclear Regulatory Commission.*

The metrics and performance measures supporting the Program's Strategic Performance Goal EQ2-1 are discussed in the following paragraphs:

Program Strategic Performance Goal EQ2-1:

Complete the scientific and technical analyses of the Yucca Mountain site, and if it is determined to be suitable for a geologic repository, obtain a license from the Nuclear Regulatory Commission.

The Program Strategic Performance Goal Elements for Yucca Mountain:

Program Strategic Performance Goal Element EQ2-1.1

Prepare and submit site recommendation.

Program Strategic Performance Goal Element EQ2-1.1 has been assigned to the Yucca Mountain Project (YMP).

Indicator: Status of meeting RW Program milestones.

Metrics: Complete the following performance measures, which also serve as Program level-1 or level-2 milestones:

There are five performance measures, three of which have been completed, to meet the Program Strategic Performance Goal EQ2-1:

- Develop a flexible design for site recommendation which can be operated in a range of thermal environments and which is represented by two example operating modes: above boiling (defined as a heat loading of 1.45 kW/m on a line of emplaced canisters) and below boiling (< 85° C average maximum waste package surface temperature). [Completed in FY 2001]
- Update the reference natural systems models for site recommendation and license application. [Completed in FY 2001]
- Conduct public hearings on a possible site recommendation by the Secretary. [Completed in FY 2001]
- Complete a final EIS.¹ [Scheduled for completion in early FY 2002]
- Finalize a comprehensive statement of the basis for recommendation for submittal by the Secretary to the President. [Scheduled for completion in early FY 2002]

Program Strategic Performance Goal Element EQ2-1.2:

Integrate plans for disposal of defense and civilian research and development waste.

Fully integrate plans for disposal of the Department's high-level radioactive waste, spent nuclear fuel and weapons-usable fissile materials generated by nuclear weapons production, naval nuclear propulsion, and civilian nuclear research and development programs into the OCRWM Program baseline and planning process.

Program Strategic Performance Goal Element EQ2-1.2 has been assigned to the Yucca Mountain Project (YMP).

Indicator: Status of meeting RW Program milestones.

Metrics: Complete the following performance measures, which also serve as Program level-1 or level-2 milestones:

¹ This milestone completes or directly supports completion of the "Financial Integrity Act Corrective Action Plan" milestone.

There are three EQ2-1.2 performance metrics:

- Complete safety analyses for Department-owned spent nuclear fuel and high-level radioactive waste to support the repository license application. [Scheduled for completion in FY 2004]
- Complete safety analyses for naval spent nuclear fuel to support the repository license application. [Scheduled for completion in FY 2004]
- Complete safety analyses for plutonium waste forms to support the repository license application. [Scheduled for completion in FY 2003]

Program Strategic Performance Goal Element EQ2-1.3:

Develop and submit a license application to NRC for construction authorization.

Program Strategic Performance Goal Element EQ2-1.3 has been assigned to the Yucca Mountain Project (YMP).

Indicator: Status of meeting RW Program milestones.

Metrics: Complete the following performance measures, which also serve as Program level-1 or level-2 milestones:

There are three performance measures pending completion to meet Program Strategic Performance Goal EQ2-1.3:

- Complete additional testing and analyses required to support license application design. [Scheduled for completion in FY 2003]
- Complete development of the license application design. [LA design scheduled for completion in FY 2004]
- Complete development of a license application for submittal to NRC for authorization to construct a repository.² [LA scheduled for submittal in CY 2004]

Project Objectives

Consistent with the Departmental and Program objectives the Yucca Mountain Project's main focus in FY 2003 will be on finalizing the technical products required to develop a license application for construction of the potential repository. The information in the license application must be sufficient for the Nuclear Regulatory Commission to conduct an independent review and reach a decision to issue a construction permit. The license application must present a defensible position that the repository can be

² This milestone completes or directly supports completion of the "Financial Integrity Act Corrective Action Plan" milestone.

constructed and operated without unreasonable risk to the health and safety of the public. The Nuclear Regulatory Commission has issued a site specific licensing regulation (Chapter 10 of the Code of Federal Regulations Part 63, or 10 CFR 63) that is risk-informed and performance-based. It requires the Department of Energy to demonstrate in the license application that the repository will meet the specified performance objectives while it is being operated (preclosure) and after it is closed (postclosure).

Preparation of the license application and supporting documents builds on the documentation completed for site characterization. The development of the license application document began in FY 2002 and continues into FY 2005. The documentation referenced by or supporting the license application will be made available to the Nuclear Regulatory Commission in electronic format as required in 10 CFR 2, Subpart J. The license application will be supported by technical documents that establish the basis for the safety case for preclosure and postclosure performance. These documents include:

- # A total system performance assessment document supported by analysis model reports that provide the bases for postclosure compliance.
- # A preclosure safety analysis document that provides the bases for preclosure compliance.
- # System description documents and engineering analyses that establish the design basis.
- # A site description document that describes the characteristics of the Yucca Mountain site.
- # Any additional documentation required by the Nuclear Regulatory Commission for its adoption of the Final Environmental Impact Statement.

In FY 2003 work will focus on the development of the license application with emphasis on the design for license application.

FY 2003 Yucca Mountain Performance Measures

- # Complete additional testing required to support license application design (Program Performance Measure YMP/RW1-3.1).
 - Complete testing data feeds for the total system performance assessment postclosure report in support of the license application (YMP level-2 milestone).
- # Continue the development of the design for the license application (Program Performance Measure YMP/RW1-3.2).
 - Complete the interim design review for the waste package in support of the license application (YMP level-2 milestone).
 - Complete the interim design review for the surface facilities in support of the license application (YMP level-2 milestone).

- Complete the interim design review for the subsurface facilities in support of the license application (YMP level-2 milestone).
- # Initiate the development of a license application for submittal to NRC for authorization to construct a repository (Program Performance Measure RW1-3.4).
- Complete the draft programmatic chapters of the license application covering radiation protection, conduct of operations, performance confirmation, and land ownership and control (YMP milestones).
 - Complete the draft site description chapter of the license application (YMP milestone).
 - Complete the draft general information chapters of the license application (YMP milestone).
 - Begin the development of the preclosure and postclosure performance chapters of the license application - Completion in FY 2004 (YMP milestones).

Significant Accomplishments and Project Shifts

The Yucca Mountain Project completed the preparation of the documentation necessary to support a Secretarial decision whether to recommend the Yucca Mountain site for development as a repository in early FY 2002. By the end of FY 2002, the Secretary's performance measures for that year are expected to be met. The Yucca Mountain Project completed the field and laboratory investigations necessary to complete our first strategic objective—the completion of the characterization of Yucca Mountain. The site characterization phase ends when the Secretary decides whether to recommend the site to the President.

By the end of FY 2002, the Yucca Mountain Project expects to meet the following goals and objectives:

- # Complete site characterization and documentation sufficient for the Secretary of Energy to make a decision on the suitability of Yucca Mountain for the development of a geologic repository at Yucca Mountain.
- # Issue a final environmental impact statement as required by the Nuclear Waste Policy Act (This also meets a milestone in the Federal Manager's Financial Integrity Act corrective action plan). (Program Performance Measure YMP/RW1-1.4)
- # Finalize the comprehensive statement of the basis for recommendation for the Secretary of Energy to submit to the President. (Program Performance Measure YMP/RW1-1.5)

The Department reached significant milestones in FY 2001. The Yucca Mountain Project completed the scientific and technical documents that provide the technical basis for a possible site recommendation and provided the documents to the State of Nevada, affected units of government, and to the public for their review and comments. The Department also developed a *Supplement to the Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive*

Waste at Yucca Mountain, Nye County, Nevada. The Department held 66 public hearings in 17 counties the vicinity of Yucca Mountain to inform residents of the area of the possible recommendation and to gather their views and comments. (Program Performance Measure YMP/RW1-1.3). The Department updated all process models and conducted a total system performance assessment for use in the site recommendation.

In FY 2002 the Department completed most of the additional scientific and engineering work identified in FY 2001 to strengthen the technical basis for a decision on the site recommendation and the license application (Program Performance Measure YMP/RW1-3.1). This completed work includes: 1) testing and analyses to further characterize and quantify the uncertainties in the assessments of the long term performance of the repository; 2) work to evaluate modifications to the operations and/or design of the potential repository to reduce the maximum temperatures reached after closure of the repository; 3) studies of waste package materials to improve understanding of corrosion processes; and 4) work on the development of multiple lines of evidence for a safety case. Some of the additional work continues into FY 2003 and beyond as part of the long-term performance confirmation process.

Work Planned Subsequent to FY 2003

- # Finalize and submit a license application to the Nuclear Regulatory Commission for authorization to construct a repository (Program Performance Measure YMP/RW1-3.3).
- # Conduct technical activities in support of the Nuclear Regulatory Commission's review of the license application (Program Performance Measure YMP/RW1-3.4).
- # Continue design work to develop final construction drawings and specifications (part of Program Performance Measure YMP/RW1-3.2).
- # Conduct performance confirmation testing, monitoring, and evaluation activities, as required by the Nuclear Regulatory Commission's licensing regulations. This phase began during site characterization and will continue through repository closure.
- # Continue development of the Nevada transportation system.
- # Conduct additional National Environmental Policy Act analyses, if required.
- # Begin procuring long lead-time equipment for repository construction(YMP level-2 milestone).
- # Start pre-construction activities to prepare for delivery of excavation equipment including tunnel boring machines (YMP level-2 milestone).

Funding Schedule

(Dollars in Thousands)

PROJECT BUDGET ELEMENTS:	FY 2001	FY 2002	FY 2003	\$ Change	% Change
Suitability/Licensing and Performance Assessment	85,442	66,052	111,896	45,844	69.4%
Core Science	65,821	71,373	71,320	-53	-0.1%
Design and Engineering	73,943	71,710	128,465	56,755	79.1%
Nevada Transportation	0	0	6,000	6,000	-
National Environmental Policy Act	2,192	1,600	1,600	0	0.0%
Operations/Construction	31,656	33,960	45,550	11,590	34.1%
Project Management	34,090	32,350	40,250	7,900	24.4%
External Oversight and Payments Equal to Taxes	19,841	19,841	19,841	0	0.0%
TOTAL, YUCCA MOUNTAIN PROJECT	312,985	296,886	424,922	128,036	43.1%

Detailed Program Justification

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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Suitability/Licensing and Performance Assessment	85,442	66,052	111,896
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In FY 2003, the Office of Civilian Radioactive Waste Management plans to continue those activities essential to support the development of a license application for repository construction for submittal to the Nuclear Regulatory Commission in CY 2004.

To obtain a Nuclear Regulatory Commission construction authorization, the Department of Energy must provide reasonable assurance that a repository loaded with different types of spent fuel and high-level nuclear waste can perform safely while it is being operated and long after it is closed. The Department will perform a total system performance assessment that analyzes how a repository containing this inventory, with each waste type encapsulated in specially designed waste packages, may perform in the geologic environment of Yucca Mountain following repository closure. This safety analysis will evaluate a nominal case considering those processes and events deemed likely at the Yucca Mountain site. It will also consider the probabilities and potential consequences of disruptive events such as earthquakes and volcanic eruptions, and the possible effects of human intrusion into the repository after permanent closure.

# Site Recommendation	33,727	8,150	0
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This work was completed in FY 2002.

# License Application	14,763	18,242	56,646
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Presuming the President and Congress approve the development of a repository at the Yucca Mountain site, the Department will continue the work essential to support development of a license application for submittal to the Nuclear Regulatory Commission in CY 2004. The license application will provide the basis for Nuclear Regulatory Commission authorization to construct a repository at the Yucca Mountain site. To obtain a construction authorization, the Department must demonstrate that a repository can be constructed, operated, monitored, and eventually closed without unreasonable risk to the health and safety of workers and the public. To accomplish this, the Department's license application must provide an adequate basis for the Nuclear Regulatory Commission to find with reasonable assurance that the Nuclear Regulatory Commission's performance objectives and other licensing criteria are met.

The license application will include a description of site characteristics, waste package designs, repository surface and subsurface designs, operations and maintenance plans for surface and subsurface facilities, results of an integrated safety analysis for the preclosure period, results of the total system performance assessment for the postclosure period, and a discussion of how the proposed waste package and repository will comply with applicable regulatory requirements. It also

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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will include a discussion of the safeguards, certification, and physical security plan and descriptions of the quality assurance program, test and evaluation plan for the development and operation of the repository, and required performance confirmation program. The license application is expected to be approximately 10,000 pages. The documents referenced by or supporting the license application will be made available to the Nuclear Regulatory Commission in electronic format through a licensing support network. In accordance with the Nuclear Regulatory Commission's regulation, 10 CFR 2, Subpart J, the data must be loaded into the licensing support network at least six months before the license application is submitted.

• Programmatic Chapters	0	1,200	7,500
Develop and review the programmatic chapters of the license application covering radiation protection, conduct of operations, performance confirmation, and land ownership and control.			
• Site Description and Design Chapters	0	0	9,000
Develop and review the site description chapter and the design chapters of the license application.			
• General Information Chapters	0	1,200	9,300
Develop and review the general information chapters of the license application.			
• Repository Performance Chapters	0	842	8,246
Develop and review the preclosure and postclosure performance chapters of the license application			
• Regulatory Interactions	2,200	3,000	3,800
Provide interactions with the Nuclear Waste Technical Review Board, the Nuclear Regulatory Commission (staff and the Advisory Committee on Nuclear Waste), and other oversight agencies. Prelicensing interactions with the Nuclear Regulatory Commission have two main objectives: reaching a common understanding of the issues that are significant to overall repository performance, and reaching agreement on the adequacy of methods and approaches to resolve these issues. The purpose of the ongoing interactions is to reach a mutual understanding of the repository concept as it develops. Oversight group interactions, such as those with the Nuclear Waste Technical Review Board, enable a shared understanding of the repository program and receipt of advice and recommendations from external experts and the public. It is anticipated that there will be 25 to 35 interactions per year.			
• Regulatory Reviews	2,000	2,200	2,800
Provide regulatory reviews and provide regulatory consultation.			
• Licensing Support Network	2,885	3,000	6,100

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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Review project records and technical documents for inclusion into the licensing support network. Maintain the licensing support network certification and operation. Periodically certify that the relevant documentary materials are available in the licensing support network

- **Verify Data** **6,678** **3,800** **7,100**

Verify the data used in the license application to ensure it is traceable and referenceable and that records processes are adequately maintained to accurately capture images and text.

- **Radiation Protection, Emergency Plan** **1,000** **3,000** **2,800**

Prepare the radiation protection program, emergency plan, and land use plans to support the regulatory documents.

Technical Information Management **22,249** **26,020** **31,300**

Manage and ensure the integrity and traceability of the technical data and program records that have been compiled to support site characterization and associated design and analysis activities for Yucca Mountain.

- **Load Internet/Licensing Support Network** **5,306** **4,010** **4,100**

Develop, update, and maintain key technical products, procedures, and program deliverables, including the licensing support network, regarding the site recommendation and license application.

- **Comments and Commitments** **1,009** **2,500** **2,550**

Develop, populate, and maintain the data bases which track comments and commitments to regulators and oversight groups in support of the site recommendation and license application.

- **Computer Applications** **4,768** **6,975** **12,000**

Develop and maintain information systems, computer applications, databases, operating systems, utilities, networks, and software development to ensure integrity of data and systems.

- **Capture Documents for Internet/Licensing Support Network** **3,893** **6,290** **6,350**

Place key technical products on the Internet from the licensing support network to provide public access to program information.

- **Maintain Technical Data Bases** **7,273** **6,245** **6,300**

Populate, and maintain the technical data bases which contain field data, results of laboratory tests, engineering analyses, location information, radioactive waste inventories, waste forms characteristics, and data sets generated and used by the Department as input to design, performance assessment, and development of the license application.

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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Performance Assessment **14,703** **13,640** **23,950**

Performance assessment is a mathematical modeling method for forecasting how the repository system (both engineered and natural barriers) contains and isolates radioactive waste over time. A total system performance assessment is an analysis in which the systems and components of Yucca Mountain are linked into a single analysis. An iteration of the total system performance assessment was completed to support the site recommendation; another iteration of the total system performance assessment will be completed in FY 2004 to support the potential license application. The iteration will reflect increased understanding of how emplaced nuclear waste would interact with the natural and engineered barriers.

Updated data from scientific tests and designs, along with review comments from various sources, will be incorporated into the abstracted models that support the total system performance assessment for license application. Abstracted models reproduce or bound the essential elements of more detailed process models and capture the uncertainty and variability in what is often but not always, a simplified or idealized form. Where appropriate, the abstracted models that support the total system performance assessment will be updated (biosphere, disruptive events, engineered barrier system degradation, waste form degradation, integrated site, near-field environment, waste package degradation, saturated-zone flow and transport, and unsaturated-zone flow and transport models.)

- **Total System Performance Assessment** **3,773** **1,520** **5,200**
Conduct the postclosure safety analyses to support the license application using the total system performance assessment method.
- **Control of Software and Data** **2,500** **3,500** **3,900**
Perform process control of software and data.
- **Abstract/Test Modeling for SR/LA** **1000** **0** **0**
Develop, abstract, and test the modeling to support license application.
- **Disruptive Events Model** **530** **400** **1,050**
Develop, abstract, and test the disruptive events models.
- **Saturated-Zone & Biosphere Model** **1,200** **1,400** **2,000**
Develop, abstract, and test the saturated-zone and biosphere models.
- **Waste Form and Engineered Barrier** **900** **570** **1,800**
Develop, abstract, and test the waste form and engineered barrier system transport models.
- **Waste Package** **400** **500** **1,400**

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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Develop, abstract, and test the waste package degradation models.

- **Unsaturated-Zone Flow** **1,900** **2,100** **3,500**

Develop, abstract, and test the unsaturated-zone flow and transport models.

- **Total System Performance Assessment Approach** **500** **1,370** **3,000**

Develop a total system performance assessment approach and model development.

- **Design and Regulatory Analysis to Support the EIS and LA** **2,000** **2,280** **2,100**

Conduct design and regulatory analysis to support the development of the license application.

Core Science **65,821** **71,373** **71,320**

This budget subelement encompasses surface and subsurface field tests and monitoring, laboratory tests, natural analog investigations, literature reviews, and analyses and modeling of resulting data. Selected long term tests, both above ground and underground, will continue after site characterization to validate assumptions in the license application that are the basis for conclusions about repository system performance. These tests will continue as part of the performance confirmation program required by the Nuclear Regulatory Commission.

Some studies will be conducted under a cooperative agreement with the University and Community College System of Nevada.

Data Analysis and Modeling **28,891** **27,690** **27,900**

This work area involves the analysis and modeling of data collected from scientific testing to help confirm understanding of the natural features and processes of the site.

Incorporate newly acquired test data and analyses into models of the site's natural features and processes to refine the models on which the performance assessment is based. The natural system process models to be updated/refined include: integrated site, unsaturated-zone flow and transport, saturated-zone flow, transport and coupled processes, disruptive events, and biosphere models. The flow and transport models are supported by several lower-level ground water flow and transport models which will also be updated/refined.

- **Saturated-Zone for Total System Performance Assessment** **1,592** **2,000** **2,500**

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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Incorporate latest test data and analyses into modeling of the saturated-zone for total system performance assessment for the license application including data collected from the alluvial tracer complex, for tests started in FY 2001.

- **Saturated-Zone Process Model Report** **3,000** **3,200** **3,100**

Incorporate latest test data and analysis into modeling of the saturated-zone for process models and license application technical updates.

- **Unsaturated-Zone Flow, Transport, and Coupled Processes Model Report** **3,261** **4,500** **4,400**

Incorporate the latest test data and analysis into modeling of the unsaturated-zone and near-field environment for process models and license application technical updates. Incorporate data from the thermal tests, including those from the cross drift started in FY 2003, into data analysis and modeling for the coupled process model and technical update for license application.

- **Unsaturated-Zone Flow, Transport, and Coupled Processes Model for Total System Performance Assessment** **3,150** **4,700** **4,600**

Incorporate the latest test data and analysis into the modeling of the unsaturated-zone and near-field environment for the total system performance assessment that supports the license application. Incorporate data from the thermal tests, including those from the cross drift started in FY 2003, into data analysis and modeling for the coupled process model and technical update for license application.

- **Near-Field Process Model Report** **2,300** **1,000** **0**

Incorporate data from the thermal tests, including those from the cross drift started in FY 2001 and FY 2002 into data analysis and modeling for the coupled process model and technical update for license application.

- **Integrated Site Model and Disruptive Events .** **1,124** **1,090** **1,200**

Incorporate latest test data and analysis into the integrated site model and disruptive events models for license application.

- **Biosphere Process Model Report** **1,618** **2,200** **2,100**

Incorporate latest test data and analysis into modeling for biosphere for license application.

- **Nevada University System** **8,500** **3,200** **3,600**

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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Support Nevada University System scientific studies which provide independent studies and analysis of Yucca Mountain. Work includes over 30 studies covering radionuclide and colloids transport in the saturated-zone, rock physical studies, and investigations of ground surface strains. Work also includes production of tracers for use in water flow tests and analysis of water samples. (The remaining Nevada University System work is included in waste forms and waste package testing in the Design and Engineering budget element area.).

- **Natural Anologs and Site Description** **946** **2,220** **3,000**
Conduct data interpretations and modeling for natural analogs and the site description for license application.
- **Technical Support** **3,400** **3,580** **3,400**
Provide technical support activities for site recommendation and license application document preparation.

Testing to Support Site Recommendation **1,273** **0** **0**
Testing and analyses supporting the site recommendation was completed in FY 2001.

Testing to Support License Application **12,278** **19,500** **19,385**
Numerous tests will support development of the documentation needed to prepare the license application. The tests include the on going long-term seepage and fracture-matrix interaction tests and the drift-scale thermal test in the exploratory studies facility; the hydrologic tests begun in FY 2000 and FY 2001 in the cross drift for enhanced characterization of the repository block, specifically the lower lithophysal unit, the thermal tests in the cross drift that were originally planned to begin in FY 2001; conclusion of the Atomic Energy Commission of Canada tests on radionuclides transport in the non-welded tuff; monitoring the Nye County Early Warning Drilling Program wells will be completed in early FY 2002; and continuing the alluvial tracer complex tests in the saturated zone started in FY 2001.

- **Water Release Seepage Experiments** **0** **600** **800**
Conduct water-release seepage experiments in the repository horizon. This includes collection and analysis of pneumatic testing, water recovery data, and determination of drift seepage threshold in the unit.
- **Moisture Monitoring and Seepage** **0** **2,500** **3,000**
Conduct moisture monitoring and seepage observations in the cross-drift beneath suspected zone of high infiltration.
- **Pneumatic** **0** **2,500** **2,500**

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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Conduct pneumatic, hydrochemical, and hydraulic testing of the Solitario Canyon Fault to obtain hydro geologic parameters.

• Site Investigations Base Support	3,111	2,200	2,200
Site investigations base support and test coordination/support for site activities.			
• Exploratory Studies Facility (ESF) Testing	2,820	3,000	3,000
Continue the drift scale thermal testing (hydrology and hydrology chemistry tests) in the ESF. The four-year cooling phase begins in FY 2002.			
• Cross Drift Testing	1,700	2,900	3,000
Conduct ambient test (fracture matrix interaction and seepage) and thermal tests (hydrologic, chemical, and mechanical) in the cross drift.			
• Support Nye County	4,000	3,000	2,085
Support Nye County Drilling—Early Warning System Drilling Project.			
• Atomic Energy Commission of Canada and US Bureau of Reclamation	647	200	200
Consult with the Atomic Energy Commission of Canada and fund interagency support from the U.S. Bureau of Reclamation Services.			
• Alluvial Tracer Complex	0	2,600	2,600
Support testing of the saturated-zone at the alluvial tracer complex.			

Testing to support the license application continues to reduce the uncertainty in the technical databases, the total system performance assessment, and design features. The testing activities are focused on addressing the issues raised by the Nuclear Waste Technical Review Board and those required to close the remaining key technical issues with the Nuclear Regulatory Commission. Some long-term tests are necessary for performance confirmation and extend well beyond the submittal of the license application. They are discussed below.

Testing for the License Application and Performance Confirmation

10,220	10,860	10,216
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The database built during site characterization and throughout repository licensing, construction, and operation will be used to validate assumptions in the license application that are the basis for Nuclear Regulatory Commission findings about repository system performance. Some testing started during site characterization will continue until repository closure as part of the performance confirmation program. Tasks include the following:

• Long-Term ESF Testing	2,500	2,560	2,500
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(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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Perform long-term seepage tests in the exploratory studies facility and the cross drift that were started during site characterization. The performance confirmation tests overlap between site characterization and follow-on phases of the Program.

• Site Investigations Base Support	1,500	1,500	1,500
Provide site investigations base support and test coordination/support for site activities.			
• ESF Testing	1,820	2,000	2,000
Continue hydrology and drift scale thermal testing (hydrology and hydrology chemistry migration tests) in the exploratory studies facility.			
• Cross Drift Testing	2,200	2,150	2,500
Perform ambient, fracture matrix interaction and seepage, and thermal tests (hydrology and hydrology chemistry tests) in the cross drift.			
• Support Nye County	200	250	150
Complete the Nye County Early Warning Drilling Project.			
• Atomic Energy Commission of Canada and U.S. Bureau of Reclamation	500	900	566
Consult with the Atomic Energy Commission of Canada and fund the interagency support from US Bureau of Reclamation Services.			
• Alluvial Tracer Complex	1,500	500	500
Support testing of the saturated-zone at the alluvial tracer complex.			
• Inyo County	0	1,000	500
Support hydrologic investigations needed to better define the relationship of the saturated-zone site-scale flow model with the groundwater flow system.			

# Environmental Safety and Health Monitoring and Compliance	13,159	13,323	13,819
Environmental monitoring and compliance began with site characterization and will continue throughout licensing, construction, operations, closure, and decommissioning of the repository.			
• Maintain Permits	6,268	6,383	6,579
Maintain compliance with environmental permits and environmental regulatory requirements.			
• Technical Support	2,472	2,800	3,100
Support to executive orders - "Greening of the Government". Provide meteorological/radiological integration and regulatory support. Environmental support to			

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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construction and design.

• Safety and Health Compliance	3,669	4,140	4,140
Maintain safety and health compliance.			
• NEPA Support	750	0	0
Provide National Environmental Policy Act technical support.			

Design and Engineering **73,943** **71,710** **128,465**

The repository would house spent nuclear fuel from commercial nuclear power plants, Department of Energy-managed spent nuclear fuel and high-level radioactive waste, naval spent nuclear fuel, and immobilized plutonium. These waste forms have diverse characteristics with respect to radioactive materials, size, weight, configuration, heat output and levels of radioactivity. Department of Energy-spent nuclear fuel presents particular complexity because there are over 250 kinds. The Department of Energy must demonstrate in the license application that a repository for spent nuclear fuel and high-level radioactive waste can perform safely during waste emplacement and for many thousands of years in the future. The Department of Energy will perform an integrated safety analysis of the performance of the repository and its operating systems prior to closure. The postclosure safety analysis is budgeted under the Suitability/Licensing and Performance Assessment budget element.

The design and engineering products needed to support the license application include the development of the preclosure integrated safety analysis; design studies to support the development of the postclosure safety analyses; design bases (which includes the design requirements and evidence to satisfy these requirements); and a description of the waste package, waste forms, and surface and underground facilities and systems. The design for license application products will be completed in FY 2004.

However, additional design for procurement and construction will need to be done before construction can begin. This design is basically in three areas, waste package, repository subsurface, and repository surface. Due to the amount of design work to be done for construction, it has to be started before the license application is submitted to the Nuclear Regulatory Commission.

The Office of Civilian Radioactive Waste Management will utilize cost-benefit trade studies in a continuous effort to determine how to optimize future funding requirements for the planned construction work prior to waste emplacement. Present evaluations include phased construction and/or modular design, determining the operating temperature of the repository, and dry handling of the radioactive waste during the packaging process. Phased construction and dry handling initially show potential for significant reductions in annual funding for the construction work.

# Waste Package Design	9,000	9,200	15,200
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(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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The diverse inventory of waste forms to be disposed of in the geologic repository will require the development of several different types of waste packages. The waste packages must be robust so they can be handled safely and they must be corrosion and heat resistant. The waste package must also provide safety with regard to criticality (a self-sustaining chain reaction) during both the pre- and postclosure periods. During the postclosure period the waste package must contain radionuclides for many thousands of years.

• WP Design	3,700	4,200	7,800
Develop waste package design and analysis to determine the materials and dimensions of waste packages for multiple waste forms. Analyze design against requirements to assure compliance with Nuclear Regulatory Commission regulations. Develop waste stream characteristics.			
• Closure Welds	2,200	2,100	3,600
Develop fabrication, welding, and testing methods and identify standards, technologies, and procedures needed to fabricate waste packages and perform and inspect the closure weld. Develop plan for constructing and testing prototypes.			
• Design Options	2,100	900	1,200
Perform waste package designs, options, and analysis for site recommendation and license application.			
• Criticality Analysis	0	1,000	2,300
Conduct disposal criticality analysis, which will develop methodologies for evaluating the potential for criticalities and attendant consequences for plausible waste form configurations. Validation of codes used in the methodology.			
• Neutronics Methology	1,000	1,000	300
Provide neutronics methodology development.			
# Waste Forms and Waste Package Materials	24,485	29,820	32,800
Testing of waste forms and candidate materials for waste package fabrication, under anticipated repository conditions, provides the basis for developing performance models that predict the natural degradation of the waste, changes to the cladding over time, and the containment of the waste within the waste packages. These tests in turn support selection of materials for fabrication of waste packages that would isolate radionuclides for thousands of years.			
• Long-Term Waste Form Testing	5,440	6,290	6,500
Perform long term waste form testing and modeling including testing of waste forms under various chemical and moisture conditions, oxidation tests using thermogravimetric analysis, flow through dissolution tests, tests on cladding and hardware, and tests on borosilicate glass.			

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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- **Waste Package Materials Testing** **10,785** **12,150** **11,500**
Conduct waste package materials testing for the site recommendation and license application including long-term corrosion, microbial induced corrosion, passivity and localized corrosion, passive film and oxide growth, thermal aging and phase stability, stress corrosion cracking and hydrogen-induced cracking, and experimental determination of surface environment.
- **Waste Package and Waste Package Testing** **8,260** **8,380** **8,400**
Conduct waste package degradation and waste form degradation testing, analysis and process modeling, and integration of near-field environment thermal, mechanical, and hydrologic processes.
- **Nevada University System** **0** **3,000** **6,400**
Support Nevada University System independent studies and analysis of Yucca Mountain work includes over 10 engineering and waste package materials studies including stress corrosion cracking/electrochemical testing and model support and thermal transport evaluations related to waste package design.

Subsurface Facilities Design **14,691** **13,360** **31,330**

Subsurface engineering provides the design, description, integration, and decommissioning of the underground features of the repository. Design requirements to be met include those for waste emplacement, containment and isolation, compliance with thermal loading requirements, stability of excavations, a safe working environment, and waste package retrieval.

- **Facilities and Utilities** **1,470** **1,270** **5,030**
Design and analysis of the subsurface facilities and safety systems, including radiological safety, radiation shielding, electrical distribution, fire protection, instrumentation and controls, remote systems, and performance confirmation design.
- **Waste Emplacement & Retrieval** **2,200** **610** **5,100**
Design and analysis of the waste emplacement and retrieval system, including waste package underground transport and underground waste package retrieval (transporter, and locomotives), and emplacement (gantry and gantry transporter).
- **Engineered Barrier System Design** **5,140** **6,200** **7,300**
Design and analysis of the engineered barrier system, including drip shield support, emplacement drift inverts, sealing and closure systems, and repository layout and design confirmation.
- **Engineered Barrier System Testing** **2,940** **3,100** **5,300**
Testing and analysis of the engineered barrier system, including testing and analysis of design features and concepts and design basis for modeling and analysis.

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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- **Ground Support Design** **1,470** **380** **4,300**

Design, testing and analysis of the ground control system, including geotechnical testing to provide rock parameters, emplacement and non-emplacement drift ground support design, and shaft and ramp design.

- **Ventilation System Design** **1,471** **1,800** **4,300**

Design and analysis of the ventilation systems, including the separate waste emplacement and underground development area ventilation systems.

- # **Surface Facilities Design** **7,589** **6,900** **32,800**

The design for license application will be at about the level of detail as preliminary design. The design for license application includes design of the buildings, operations, and systems located in the radiological controlled area for inclusion in the license application. Surface design for license application focuses on engineering that supports key surface operations: those buildings, systems, and operations within the radiologically controlled area; site utilities; those buildings, operations, and systems outside the radiological controlled area; and off-site utilities.

- **Site Recommendation Design** **3,347** **0** **0**

Develop the design for site recommendation.

- **Waste Handling Building General Arrangement.** **2,392** **2,115** **5,200**

Develop the waste handling building general arrangement drawings, flow diagrams and equipment arrangements, and system descriptions for the design for license application in sufficient detail to support the preclosure safety analysis.

- **Waste Handling Building Design . . .** **1,850** **2,060** **11,800**

Develop the design for license application for the waste handling building; includes receipt of waste (transportation casks), fuel blending for manageable heat content, waste package welding, and related operations.

- **Radiological Controlled Area Design** **0** **1,340** **6,400**

Develop the design for license application for the radiological controlled area buildings, operations, and systems necessary for waste handling system, waste treatment, carrier preparation, and transporter maintenance.

- **Outside Radiological Controlled Area Design** **0** **1,310** **4,900**

Develop design for outside the radiological controlled area buildings, operations and systems that make up the balance of plant including: administration, fire control, emergency response, medical, radiological monitoring, communications, security, transportation, and safeguards and security.

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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- **Site Utilities Design** **0 75 3,600**
 Develop design for the site utilities, including electrical, environmental monitoring, fuel oil and gasoline storage, sanitation, storm control and drainage, and water supply.
- **Off-Site Power and Communication Design** **0 0 900**
 Develop design for the off-site power and communications, develop designs, analysis, and specifications sufficient for request-for-proposals for procurement.

Systems Engineering **18,178 12,430 16,335**

The systems engineering process is important to coordinate and integrate design functions to ensure that designs meet regulatory and safety requirements for protecting workers, the public, and the environment; to demonstrate that designs as built will operate cost-effectively and efficiently; and to ensure that changes to designs and specifications are documented and controlled in accordance with quality assurance requirements.

- **Design Integration** **8,200 7,050 7,100**
 Conduct design and engineering integration—update and maintain the interface control documents that define the physical interfaces among structures, systems and components of the waste management system and provide integration among the design elements.
- **Alternatives/Options Evaluations** **1,000 290 500**
 Provide alternatives/options evaluation—conduct an integrated review of design options.
- **Interface Configuration Management** **1,200 670 1,400**
 Provide an interface configuration management for license application data and design; provide support for license application verification. Conduct a comprehensive review of several hundred design analyses to verify that the designs meet the regulatory and design requirements.
- **Procurement Construction-Test Development** **2,000 0 1,500**
 Develop procurement construction tests and definition of evaluation and test plans.
- **Cost Estimating** **100 120 1,200**
 Update the repository total project cost estimate and the total system life cycle cost estimate.
- **Preclosure Safety Analysis** **2,300 1,200 2,385**
 Complete integrated preclosure safety analyses of the repository design and operations.
- **Mined Geologic Repository Requirements** **2,400 2,750 1,500**
 Develop the site recommendation and license application requirements, which include the design basis events and system design description documents.

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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- **Performance Confirmation Test Plans** **978** **350** **750**

Update the performance confirmation and test and evaluation plans.

- # **Nevada Transportation Design** **0** **0** **6,000**

Initiate design for a Nevada transportation system, develop requirements and provide technical support for conceptual design of the Nevada transportation system. DOE would select a contractor to develop the NEPA documentation necessary for developing a branch rail line in Nevada. In FY 2003 the NEPA contractor would prepare a project management plan, project plan, project schedule, and draft annotated outline for the necessary documentation.

- # **National Environmental Policy Act** **2,192** **1,600** **1,600**

A final environmental impact statement (FEIS) will accompany the Secretary's site recommendation to the President. Subsequently, the Nuclear Waste Policy Act requires the FEIS to be adopted by the Nuclear Regulatory Commission to the extent practicable as part of the Commission's decision-making on the license application. Work continues to complete the administrative record of the FEIS, to develop the mitigation action plan, and to assist the Commission in adopting the FEIS. In addition, the Department will perform National Environmental Policy Act compliance analyses based on changes to the design, total system performance assessment and scientific or environmental elements of the program that could affect the environmental impacts described in the FEIS or in the mitigation action plan implementation.

- **Administrative Record, Mitigation Action Plan, and Analyses** **2,192** **1,600** **1,600**

In FY 2002, complete the administrative record that supports the environmental impact statement and develop the mitigation action plan required by the National Environmental Policy Act, to mitigate adverse effects of repository construction and operation. In FY 2003, perform compliance analyses to determine if the FEIS needs to be supplemented or if additional NEPA documentation, such as an Environmental Assessment or Categorical Exclusion, is required.

- # **Operations/Construction** **31,656** **33,960** **45,550**

This budget subelement encompasses the work required to provide the support systems, infrastructure, construction, utilities, and safety systems needed to support field testing and maintain access to the site and underground research facilities at Yucca Mountain.

- **Maintain ESF Support Systems** **13,520** **14,760** **23,760**

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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Maintain and operate the support systems that provide a safe work environment for scientists conducting tests in the exploratory studies facility and other underground facilities. The systems include ventilation, power distribution, water supply, compressed air supply, lighting, ground support, underground transportation, handling of materials and supplies, management of trash and refuse, sanitation, underground access control, data acquisition, fire protection, and communications. In FY 2003, upgrade or replace potentially unsafe/obsolete equipment/systems in the Exploratory Studies Facility.

- **Construction for Testing** **4,070** **4,000** **4,000**

Provide excavation, construction, and setup support for performance confirmation testing.
- **Site Utilities and Services** **10,666** **11,500** **12,590**

Provide communication services, electricity and water, collecting sewage and refuse, and janitorial services at the Yucca Mountain site. Control materials and property on the site and warehouse supplies. Operate motor pool, provide bus transportation for workers and fuel for vehicles. Provide staging for underground activities and utility feeds to underground operations. Calibrate scientific equipment. Coordinate the operations for public tours of the site. Support the Facility Representative program. Coordinate the design and construction of field maintenance facilities.
- **Site Safety and Health** **3,400** **3,700** **5,200**

Install additional engineering controls to protect workers and visitors to the site from hazards resulting from site activities. The Project will continue its rigorous safety and health efforts.

Project Management Support **34,090** **32,350** **40,250**

This budget subelement encompasses the management support that enables technical and scientific programs to plan for and fund the collection of data; to analyze, process, and manage it; and to compile and synthesize it into major products and decision documents.

- **Project Control** **22,137** **22,000** **24,795**

Provide project control, cost estimating and planning; information technology systems and support; records management/document control–non-quality records; information management operations–network and computer operations; administrative support–mail, logistics, and facility/equipment management.
- **Institutional Support** **4,253** **4,200** **5,255**

Provide institutional outreach and public relations, administration of public tours, and information centers.
- **QA and Safety Training** **3,100** **3,150** **4,100**

Provide quality assurance training, safety training, underground training, and policy and

(Dollars in Thousands)

FY 2001	FY 2002	FY 2003
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procedure training.

- **Lease Scoring** **4,600** **3,000** **6,100**

Maintain current office space leases in Las Vegas, Nevada. In FY 2003, the Office of Civilian Radioactive Waste Management will be negotiating new lease contracts. All new contracts for leased space are being negotiated to reduce the lease termination liability.

External Oversight and Payments-Equal-To-Taxes 19,841 19,841 19,841

This budget subelement includes funding for Program oversight and payments-equal-to-taxes.

External oversight is required by the Nuclear Waste Policy Act [Section 116(c)(1)]; financial assistance is being requested for eligible units of government for external oversight.

Payments-equal-to-taxes are required under the Nuclear Waste Policy Act [Section 116(c)(3)]. Payments-equal-to-taxes are made to the State of Nevada and Nye and Clark Counties.

- External Oversight **8,500** **8,500** **8,500**
- Payments-Equal-To-Taxes **11,341** **11,341** **11,341**

**Explanation of Funding Changes from
FY 2002 to FY 2003**

FY 2003 vs. FY 2002 (\$000)

Suitability/Licensing and Performance Assessment +45,844

The budget request increase for the Suitability/Licensing and Performance Assessment budget element is due to completing site characterization and shifting to license application development; developing the license application chapters; and substantial work on the performance assessment for the license application in FY 2003. Significant resources will be necessary to develop the license application and preclicensing regulatory interactions. The performance assessment budget increases as the design performance calculations and total system performance assessment necessary for the license application are completed. The total system performance assessment and the iterations for license application must fulfill specific Department of Energy and Nuclear Regulatory Commission regulatory requirements, some of which have only recently been promulgated. Data and computer model quality assurance requirements must also be completed for these iterations.

Core Science -53

The request for the Core Science budget element is essentially the same as last year, but the emphasis has shifted from site characterization to collecting and analyzing data to clarify the science issues associated with the Key Technical Issues developed jointly with the Nuclear Regulatory Commission.

Design and Engineering +56,755

The upward trend in the Design and Engineering budget element request from FY 2002 to FY 2003 reflects the increased design activity needed to essentially complete the design for license application. The design work in support of site characterization was more conceptual than what is necessary for the license application. The design in prior years has been focused on those areas that have little or no regulatory precedent, such as the waste package and underground operations, leaving much of the surface facilities with less design detail. For the license application, the design, which includes 35 complex surface systems, the waste package, and the underground facilities, will be more advanced and detailed for safety class systems. The license application design for non-safety systems will be general, comprehensive system descriptions, layout drawings, with more detail where there are interfaces with safety class systems. The design will focus on systems and structures both inside and outside the radiological controlled area of the repository and will include on-site transportation, on-site and off-site power and communications. The license application also requires a preclosure safety analysis, which is a defensible regulatory safety analysis of systems operations, accident analysis, and mitigation features.

FY 2003 vs. FY 2002 (\$000)

Nevada Transportation

+6,000

The Nevada Transportation is a new budget element for FY 2003. The Nevada transportation system includes planning the development of a rail or highway link from existing major transportation systems to Yucca Mountain. Work in this area has been limited in the past until site characterization was complete.

National Environmental Policy Act

0

The budget request for the National Environmental Policy Act budget element remains the same.

Operations/Construction

+11,590

The request for the Operations and Construction budget element increase in FY 2003 due to the necessity to upgrade or replace some of the underground systems in the ESF. The systems, such as the rail, power supply, and ventilation systems, were built as temporary construction systems and were adequate during site characterization. However, they cannot be integrated into the repository and need to be replaced or upgraded. Also, the design that integrates the current testing facilities into the repository will be started in FY 2003.

Project Management Support

+7,900

The request for the Project Management Support budget element increased due to an increase in training as the project moves into a regulatory-safety environment, more public outreach to answer inquiries during the development of the license application, and additional project management and project control systems.

External Oversight and Payments-Equal-to-Taxes (PETT).

0

The budget request for the External Oversight and Payments-Equal-to-Taxes budget element does not change.

TOTAL FUNDING CHANGE, Yucca Mountain Project

+128,036

Waste Acceptance Storage and Transportation

Mission Supporting Goals and Objectives

Project Mission

The mission of the Waste Acceptance, Storage and Transportation (WAST) Project is to support the Department's **Strategic Objective EQ2** to achieve the safe orderly transfer of spent nuclear fuel, and high-level radioactive waste to a facility developed pursuant to the Nuclear Waste Policy Act, as amended (NWPA).

Project Goals

The Waste Acceptance, Storage, and Transportation Project is supporting the Department's Strategic Objective EQ2, which includes the following:

Strategic Objectives EQ2: *Complete the characterization of the Yucca Mountain site and, assuming it is determined suitable as a repository and the President and Congress approve, obtain requisite licenses, construct and, in FY 2010, begin acceptance of spent nuclear fuel and high-level radioactive wastes at the repository.*

To meet Strategic Objective EQ2, the Waste Acceptance, Storage, and Transportation Project is also supporting the following:

Program Strategic Performance Goal EQ2-1: *Complete the scientific and technical analyses of the Yucca Mountain site, and if it is determined to be suitable for a geologic repository, obtain a license from the Nuclear Regulatory Commission.*

Specifically, the WAST Project provides information related to commercial and DOE-owned waste inventories and national transportation issues to support the evaluation of the suitability and NRC licensing of the Yucca Mountain site. Included in the Program Strategic Performance Goal EQ2-1 is **Program Strategic Performance Goal Element EQ2-1.4** for Waste Acceptance, Storage, and Transportation.

Program Strategic Performance Goal Element EQ2-1.4

Commence major transportation activities.

Program Strategic Performance Goal Element EQ2-1.4 has been assigned to the Waste Acceptance, Storage and Transportation Project (WAST).

Indicator: Program product milestones.

Metrics: Complete the following performance measures, which also serve as Program level-1 or level-2 milestones:

There are 7 performance measures pending completion to meet Program Strategic Performance Goal Element EQ2-1.4:

- Issue the *Revised Proposed Policy and Procedures for Implementation of Section 180(c) of the Nuclear Waste Policy Act of 1982, as amended*, for public comment. [Scheduled for completion in FY 2002]
- Issue a draft Request for Proposals (RFP) for waste acceptance and transportation services.¹ [Scheduled for completion in FY 2002]
- Issue the final *Policy and Procedures for Implementation of Section 180(c) of the Nuclear Waste Policy Act of 1982, as amended*.¹ [Scheduled for completion in FY 2003]
- Develop and issue final RFP for waste acceptance and transportation services. [Scheduled for completion in FY 2003]

Project Objectives

Funding will provide for the major activities that will precede removal and transportation of SNF and HLW from storage sites to a Federal facility for disposal. These activities include: the collection and maintenance of commercial SNF discharge information; development of procedures for verification of SNF parameters; maintenance and implementation of the Standard Contract; interactions with the Nuclear Regulatory Commission, contract holders, and others concerning nuclear materials safeguards; interactions with stakeholders; issuance of the final *Policy and Procedures for Implementation of Section 180(c) of the Nuclear Waste Policy Act, as amended*; and development of the acquisition process for waste acceptance and transportation equipment and services, including the issuance of a request for proposals and making awards for planning (Phase A) activities.

The near-term focus of the Transportation budget element involves the implementation of a market-sector-based competitive procurement process for the acquisition of a safe and cost-effective transportation capability to accomplish the Department's commercial SNF waste acceptance and transportation requirements. Multiple phased contracts will be awarded to foster competition and limit contract risk to the Department. Contract phases will incorporate the development of the detailed plans for waste acceptance and transport; the fabrication and mobilization of the transportation casks and related equipment; and the actual transportation operations.

The Program is currently reevaluating its approach to the acquisition of waste acceptance and transportation services. It is considering the development of an alternative approach which would serve

¹ This milestone completes or directly supports completion of the "Financial Integrity Act Corrective Active Plan."

as a transition to a market sector-based competitive procurement process. One alternative under consideration would potentially utilize Federal staff and a transportation contractor in a phased approach to do the initial planning and definition of the equipment requirements. Some transportation casks and auxiliary equipment would be acquired through performance-based acquisitions. The initial years of operation would be more directly contracted and managed by the Program. The transportation system would be operational at the time of the Monitored Geologic Repository startup and would evolve into a more competitive performance-based approach after successful, and consistent operation has been demonstrated over a period expected to be 3-5 years. If implemented, this approach would have a similar funding and schedule profile to the current acquisition approach.

In order to help address issues related to the transportation of radioactive waste and to promote understanding and build public confidence, the transportation activity also involves cooperative agreements and interactions with organizations representing state, Tribal, local, professional, technical, and industry interests.

The following activities will be required for the Waste Acceptance budget element: the development of plans for achieving the legal and physical transfer of SNF and HLW to the Federal Government from the owners and generators of such SNF and HLW; the establishment and implementation of agreements with the Office of Environmental Management for the acceptance of Department-owned SNF and HLW and with the Office of Naval Reactors' Navy Nuclear Propulsion Program for acceptance of naval SNF; the development of planning assumptions and recommendations for the Department's waste acceptance policy; and supporting the transportation, storage and disposal of SNF and HLW, once accepted.

The activities of the Project Management budget element support each of the product areas for the Waste Acceptance, Storage and Transportation Project. Specifically, the Project Management budget element includes the traditional activities associated with project management, project control, and technical and programmatic integration of tasks and activities across the Project.

FY 2003 Performance Measures

Transportation

- Develop and issue final RFP for waste acceptance and transportation services. (WAST/RW1-4.4)
- Award initial contracts for waste acceptance and transportation services for planning (Phase A) work scope. (WAST/RW1-4.5)
- Issue final *Policy and Procedures for Implementation of Section 180(c) of the Nuclear Waste Policy Act of 1982, as amended*. (WAST/RW1-4.3)

Waste Acceptance

- Update the commercial spent nuclear fuel inventory data (WAST level-2 milestone)
- Maintain and implement the provisions in the Standard Disposal Contract (Ongoing WAST activity)

- Maintain and implement the agreements for disposal of Government-owned SNF and HLW (Ongoing WAST activity)
- Complete modification to commercial disposal contracts (WAST level-2 milestone)
- Complete required modifications to memoranda of agreement (MOAs) to reflect changing Program responsibilities (WAST level-2 milestone)

Project Management

- Develop the Waste Acceptance, Storage and Transportation Annual Plan (WAST level-2 milestone)
- Update the Project summary schedule (WAST level-2 milestone)
- Update the Project Cost and Schedule Baseline document and Project Life Cycle Cost Report. (WAST level-2 milestone)

Significant Accomplishments and Project Shifts

By the end of FY2002, the Waste Acceptance, Storage and Transportation Project expects to meet the following performance measures:

- Issue draft RFP for acquisition of waste acceptance and transportation services after repository site selection.(WAST/RW1-4.2)
- Establish cooperative agreements with regional and national groups to promote understanding and build public confidence in the safe transport of spent nuclear fuel and high-level waste. (WAST level-2 milestone supporting Performance Goal RW-2-1)
- Issue *Revised Proposed Policy and Procedures for Implementation of the Section 180(c) of the Nuclear Waste Policy Act, as amended* for public comment. (WAST/RW1-4.1)

Funding Schedule

(dollars in thousands)

PROJECT BUDGET ELEMENTS	FY 2001	FY 2002	FY 2003	\$ Change	% Change
Transportation	520	1,938	14,172	12,234	631.3%
Waste Acceptance	1,614	1,615	2,328	713	44.1%
Project Management	527	550	600	50	9.1%
TOTAL, WAST PROJECT	2,661	4,103	17,100	12,997	316.8%

Detailed Program Justification

(dollars in thousands)

	FY 2001	FY 2002	FY 2003
Waste Acceptance, Storage and Transportation	2,661	4,103	17,100
# Transportation	520	1,938	14,172
• Acquisition of WA&T Services.	420	1,838	12,372

The Program plans to award multiple contracts for each servicing region for the initial waste acceptance and transportation (WA&T) services planning phase work scope in FY 2003. To foster competition under this acquisition the Nation has been divided into four separate servicing regions. This is a two year planning phase. It may include one or more awards in each region. During this phase, the contractor would develop detailed plans for the acquisition and mobilization phase and the operations phase activities. These plans describe how the contractor would: manage the activities; acquire the required equipment and services; work with the contract holders at each reactor site in its servicing region; schedule all shipments to a Federal repository; analyze potential transportation routes; communicate with stakeholders such as state and local governments and Indian Tribes; develop emergency response procedures; apply its NRC-approved quality assurance program to the project; and obtain commitments for financing. In addition, the servicing contractor would develop a proposal for a mobilization phase and the operations phase with firm fixed prices and rates.

The proposal and the plans are to be delivered to OCRWM at the end of the planning phase and would be used by the Department to determine which, if any, contractors to authorize to proceed with mobilization and operations.

The plans would be based on spent nuclear fuel acceptance schedules provided by the Department to the contractors. Each utility in the United States with spent nuclear fuel to be accepted for disposal by the Department has a disposal contract with the Department that defines the conditions and basis for the schedule for acceptance and transportation of the utility's spent nuclear fuel. The schedules to be furnished to the servicing contractors would be based on these disposal contracts. The contractors would submit monthly progress reports and there would be periodic management reviews. They would be paid a pre-determined firm-fixed price at the end of the planning phase after delivery of all plans that are acceptable to OCRWM.

• Implementation of NWPA Section 180(c).	100	100	600
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Review and, as appropriate, modify the *Revised Proposed Policy and Procedures for Implementing Section 180(c) of the Nuclear Waste Policy Act, as amended* (issued in FY 2002) for final issuance in FY 2003 of final *Policy and Procedures for Implementing Section 180(c) of the Nuclear Waste Policy Act, as amended*. Develop draft grant application packages for distribution to eligible jurisdictions. Complete arrangements for grants administration.

(dollars in thousands)

	FY 2001	FY 2002	FY 2003
• State, Local and Tribal Interactions	0	0	1,200
<p>Enhance interactions with state, Tribal, and local governments, other Federal agencies, and transportation industry to promote understanding and build public confidence. Support cooperative agreements with regional groups to address institutional and technical transportation operations issues. Track resolution of institutional issues with state, Tribal, and transportation industry representatives. Continue activities assessing barge, rail, truck, truck, and intermodal institutional issues. Support Transportation External Coordination/Working Group meetings, technical workshops, and public information needs.</p>			
# Waste Acceptance	1,614	1,615	2,328
• RW Interface Coordination	175	175	108
<p>In FY 2002 and FY 2003, manage interface/liaison with other affected elements of the Civilian Radioactive Waste Management System.</p>			
• Waste Acceptance Planning	639	640	620
<p>Support the waste acceptance process and Regional Servicing Contractor services acquisition processes through modifications and/or deviations to the Standard Disposal Contract, as required. Maintain spent nuclear fuel storage data and assumptions; update industry storage forecasts to support Civilian Radioactive Waste Management System planning; and support development of waste acceptance criteria.</p>			
• Standard Disposal Contract Management	450	450	450
<p>Implement the Standard Disposal Contract and other agreements; validate and disseminate utility supplied spent nuclear fuel discharge/storage data; and, update the Utility Spent Nuclear Fuel Discharge Projections and Analysis document. Update verification requirements as required, including commercial and DOE-owned spent nuclear fuel and high level waste, and issue the Spent Nuclear Fuel Verification Plan and Appendix for DOE SNF/HLW, Revision 2.</p>			
• DOE Waste Acceptance	350	350	250
<p>Implement the responsibilities established in the Memoranda of Agreement for acceptance of DOE spent nuclear fuel, high level waste and Navy spent fuel. This includes issuance of high level waste data needs; development of acceptance capacities for DOE and Navy materials requiring acceptance, transportation, disposal and establishment of fee payment schedules.</p>			
• Litigation Support	0	0	900
<p>Department of Justice support for litigation involving civilian radioactive waste management system.</p>			

(dollars in thousands)

	FY 2001	FY 2002	FY 2003
# Project Management	527	550	600
• Program Control	160	160	160
Provide cost, schedule, planning, and integration related tools and services: cost and schedule baseline management; strategic and program plan development/update; and project management documentation. Provide project control functions by monitoring cost, schedule and technical performance, performing variance analyses, and developing and implementing corrective actions.			
• Program Planning	267	290	290
Develop the Waste Acceptance, Storage and Transportation Annual Plan, and support the project validation review process; update the long-range plan, as required.			
• WAST Life-Cycle Cost Estimate	100	100	150
Maintain Waste Acceptance, Storage and Transportation Project life-cycle cost estimate, support the Program's total system life-cycle cost evaluation, and update Waste Acceptance, Storage and Transportation Project Life-Cycle Cost Report.			

Explanation of Funding Changes from FY 2002 to FY2003

FY 2003 vs. FY 2002 (\$000)

Transportation +12,234

The increase reflects the funds requested for evaluating contractor proposals for the provision of waste acceptance and transportation services and award of a contract in FY 2003 to initiate the detailed planning for such services. In addition, the final *Policy and Procedures for Implementation of Section 180(c) of the Nuclear Waste Policy Act of 1982, as amended* will be developed and issued in FY 2003. Increased emphasis will be placed on interactions with state, Tribal, and local governments, other Federal agencies, and transportation industry to coordinate transportation planning, promote understanding, and build public confidence.

Waste Acceptance +713

The increase is required to support the Department of Justice litigation effort involving civilian radioactive waste management system.

Project Management +50

The increase is due to increase analyses related to the development of Project Life Cycle Cost estimate.

Total Funding Change, WAST Project **+12,997**

Program Integration

Mission Supporting Goals and Objectives

Program Integration provides management support to the Program Director, the Yucca Mountain Site Characterization Project, and the Waste Acceptance, Storage and Transportation Project. Program Integration is comprised of Quality Assurance, Program Management, and Human Resources and Administration. These offices are responsible for quality assurance, system integration, regulatory integration, strategic planning, international waste management, program management, human resource and development, audits, education and information, and information management.

Quality Assurance

The Quality Assurance element identifies and ensures implementation of federally mandated requirements for Nuclear Quality Assurance (QA) applicable to the Civilian Radioactive Waste Management System (CRWMS) program activities related to radiological health and safety and waste isolation. It establishes and maintains a Quality Assurance Program formulated to ensure quality in activity planning and performance through the developed end-products. Documented compliance with these quality requirements establishes confidence in the effective implementation of the CRWMS program to support the execution and eventual licensing and/or certification of high-level nuclear waste operation activities.

Activities associated with the QA function are performed by personnel not associated with the performer organization (NRC independence requirements), and are directly related to the acceptability of the technical products and services provided by the performer organization. The Quality Assurance element achieves this independence by requiring the Program's Management and Operations contractor (M&O) to establish a Quality Assurance organization, independent of the line functions, to support achievement of quality in M&O products, services and activities. Further independence (as required by NRC regulation) is achieved by utilizing a DOE Quality Assurance support contractor responsible for establishment/maintenance of DOE Quality Assurance Requirements and Policy to be implemented by the M&O and other participants and by performance of independent oversight (audits, surveillance, and reviews) of M&O and other participant products, services, and activities. Quality Assurance is not an administrative function, but rather a necessary step (per NRC regulation) to assure technical acceptability and confidence in fulfilling our mission to protect the public, workers, and the environment.

Program Management

System Integration

The Systems Integration element focuses on the development of an integrated waste management system. Systems analyses are conducted to ensure that the acceptance and transportation services components are compatible with the repository and waste package design activities. These system components must perform as a coordinated single system that meets mission requirements, and is safe,

efficient, reliable, and cost-effective. Systems Integration also coordinates policy, interprets technical requirements, and manages Program requirement documents. The primary effort also includes maintaining current descriptions of the overall waste management system, its components, and interfaces to enhance communication among parties responsible for individual system components.

Systems Integration also provides support and strategic planning assistance to the Director and project offices. This element annually determines the adequacy of the fee charged to generators of commercial Spent Nuclear Fuel (SNF), in accordance with the Nuclear Waste Policy Act of 1982. Periodically, the Department's recommendation requires the conduct of Total System Life-Cycle Cost (TSLCC) analyses to support the decision of whether program revenues are sufficient to cover the cost of the program. Additionally, this element conducts systems studies, tradeoff studies, sensitivity studies, and contingency analyses to ensure that the system-wide impacts of proposed changes are considered; alternative or contingency system configurations and concepts are evaluated. In addition, Systems Integration manages all program-level baseline change control board activities and monitors YMSCO project-level baseline control board activities.

Regulatory Integration

The Regulatory Integration element ensures that the activities leading to the final waste management system, including commercial and Department-owned nuclear materials, are consistent with the regulatory guidance provided by the governing authorities. This element ensures project activities are consistent with Departmental policy and environmental impact statements for other Department programs. The focus is on plans and strategies for compliance with applicable statutes and regulations. The approach to accomplishing this mission is to conduct regulatory reviews and continue interactions with several external oversight agencies, including the Nuclear Regulatory Commission (NRC), and the Environmental Protection Agency (EPA). The external participation includes addressing management and technical issues related to the civilian radioactive waste management system. Interactions with the NRC on licensing issues are critical to the success of the overall program schedule as they directly affect the NRC licensing process for program activities and facilities.

Strategic Planning

The Strategic Planning element supports the Director's program planning requirements by integrating policy direction received from the Administration, Congress, and the Office of the Secretary into an overall program strategy. It provides resources for Program compliance with Departmental obligations resulting from the Government Performance and Results Act of 1993 (GPRA) and the Government Management Reform Act of 1994 (GMRA), including the Department's Strategic Plan, Annual Performance Plan, and annual Performance and Accountability Report. It supports the development and maintenance of multi-year and annual planning documents such as the OCRWM Program Plan. Strategic planning also provides funding for responses to program inquiries and links requirements with external program oversight parties and liaison activities within the Department.

International Waste Management

The International Waste Management element keeps the Program abreast of international developments and new ideas, and affords OCRWM the opportunity to provide technical exchanges and discuss strategies for disposition of nuclear materials. The element assists in preparing for bilateral meetings and provides the Program's inputs to various international fact and information books.

This element maintains up-to-date information on other countries' nuclear energy and nuclear waste management programs. In addition, collaborative work on repository issues with the Russian Federation is supported.

Program Management

The Program Management element provides the basis for prioritizing, and allocating resources; defining, costing, and executing work scope and schedules; and monitoring, analyzing, and reporting Program performance. The key components of this element are business and management center planning, formulating and executing budgets and annual work plans, and establishing Program-level cost and schedule.

Human Resources and Administration

Audits, Reports, Education and Information

The Audits, Reports, Education and Information element includes diverse activities that support the Program's mission and ensure compliance with legislative requirements to: (1) develop and submit an Annual Report to Congress; (2) develop and submit audited financial statements to the Department's Chief Financial Officer, (3) develop and submit the Annual Assurance Memorandum to the Secretary; and (4) develop and submit to Congress, OMB and GAO, Departmental responses to recommendations in GAO and DOE IG audit reports. Implementation of an appropriate investment strategy and the prudent management of the Nuclear Waste Fund investment portfolio are also essential to fulfilling the Program's fiduciary responsibility under the Nuclear Waste Policy Act. Maintenance of the OCRWM Home Page and issuance of *The OCRWM Enterprise*, a semiannual Program newsletter, support the Nuclear Waste Policy Act objective of keeping the public informed of Program activities, and assist in building customer, stakeholder, and public confidence in and support for the Program. The Program's Historically Black Colleges and Universities Undergraduate Scholarship and Radioactive Waste Management Graduate Fellowship Programs support the Department's compliance with Executive Order 12677 and the Secretary's science education initiative, as well as ensuring that the Program's goal for a diversified workforce of highly specialized scientists and engineers will be met in the future.

Information Management

The Information Management element encompasses the strategic application of information technology. It supports the accomplishment of the Program's mission by providing integrated information systems, solutions and services that enhance the productivity of human resources, drive business process improvement efforts, and reduce overall Program costs and Departmental initiatives. Information

management includes computer security; designing and developing information systems to ensure a reliable infrastructure for effective and timely access to, and communication of, information; integration and integrity of technical, regulatory, management, and financial information; streamlining Program work processes through automation to reduce the paperwork burden and increase the productivity and job satisfaction of human resources; promoting an organizational culture based on planning, compliance with Federal and Departmental regulations, and responsiveness to Program dynamics; and supporting the collection and storage of records required for licensing.

Funding Schedule

(dollars in thousands)

	FY 2001	FY 2002	FY 2003	Change	% Change
Quality Assurance	0	6,400	6,918	518	8.1%
Program Management					
Systems Integration	2,833	2,565	3,833	1,268	49.4%
Regulatory Integration	913	913	913	0	0.0%
Strategic Planning	1,020	1,122	1,187	65	5.8%
International Waste Management	933	933	933	0	0.0%
Program Management	534	523	655	132	25.2%
Total, Program Management	6,233	6,056	7,521	1,465	24.2%
Human Resources and Administration					
Human Resources Development	20	20	30	10	50.0%
Audits, Reports, Education, Information and QAMA	1,246	730	1,231	501	68.6%
Information Management	4,572	4,805	3,991	-814	-16.9%
Total, Human Resources Administration	5,838	5,555	5,252	-303	-5.5%
Total, Program Integration	12,071	18,011	19,691	1,680	9.3%

Detailed Program Justification

(dollars in thousands)

FY 2001	FY 2002	FY 2003
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Program Integration **12,071** **18,011** **19,691**

Quality Assurance **0** **6,400** **6,918**

- Provide in-process (i.e., during product development) quality assurance support to ensure Nuclear Regulatory Commission quality assurance requirements are appropriately incorporated into technical products.
- Support quality assurance interface within the Program and external to the Program with other DOE high-level waste producing entities.
- Support the maintenance of the Office of Civilian Radioactive Waste Management (OCRWM) quality assurance program and independent oversight of work performance.

Program Management **6,233** **6,056** **7,521**

Systems Integration **2,833** **2,565** **3,833**

- Revise the CRWMS Program baseline to incorporate updated policies, Administration/Congressional direction, and requirements.
- Support the development of Project technical baseline and interface control documentation. Establish technical baseline for CRWMS through repository closure. Update Total System Description for the Program.

Systems Analysis

- < Update CRWMS Total System Life Cycle Cost estimate and Report on Fee Adequacy to be consistent with repository Site Recommendation design and acceptance and transportation strategies. Conduct, review, and issue systems engineering logistics and waste stream analyses to support Program and project planning, project development, and design. Develop and review cost assumption packages in support of the Total System Life Cycle Cost (TSLCC) analyses; maintain and enhance, as necessary, detailed cost and logistics computer models; and update cost databases. Provide input on the development of fee payment schedules to ensure appropriate allocation of Congressional Defense Nuclear Waste Disposal Appropriations.
- < Interface and support new and emerging high-level radioactive waste disposal technologies.

(dollars in thousands)

FY 2001	FY 2002	FY 2003
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- < Conduct systems studies, tradeoff studies, sensitivity studies and contingency analyses to ensure that the system-wide impacts of proposed changes are considered and alternative or contingency system configurations and concepts are evaluated.

Configuration/Baseline Management

- < Manage all program-level Baseline Change Control Board activities and monitor YMSCO project-level Baseline Change Control Boards' activities.

Regulatory Integration **913** **913** **913**

- Support project activities associated with the planning, development, review, and submittal of a license application and final environmental impact statement, including completing a regulatory compliance plan, developing a licensing case for each regulatory requirement, confirming adherence to applicable regulatory guidance, tracking completion of prior commitments made to the regulatory agency and staff, reviewing the licensing documents, and participating in public meetings to describe the license application process and the completed licensing documents.
- Analyze proposed regulatory changes to determine impact on the Program and ensure compliance with newly promulgated rules. Provide continued support on emerging regulatory issues that will arise as the projects continue to move forward.
- Establish Program-level regulatory policy, licensing strategy, and requirements related to Safeguards and Security (S&S) and support implementation of requirements.
- Support day-to-day interactions with the project and NRC, including the ACNW, on the planning of and mechanics for the license application review, the interrogatory and response process, technical interchanges on issues raised in the license application review, documentation of closure of issues, and submittal of amendments to the license application.
- Coordinate and participate in interactions with external agencies, such as: the Nuclear Regulatory Commission (NRC), the Environmental Protection Agency, and the NRC's Advisory Committee on Nuclear Waste (ACNW). These interactions include addressing management and technical issues related to the civilian radioactive waste management system.

(dollars in thousands)

FY 2001	FY 2002	FY 2003
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- Coordinate and integrate Program environmental, safety, and health activities to ensure compliance with Departmental directives and policies, EPA standards, NRC licensing requirements, and Occupational Safety and Health Act (OSHA) standards. Major activities include coordination of environmental impact statements from other Departmental Offices involving disposal of spent nuclear fuel, high-level waste and other Department-owned radioactive materials.
- Support project regulatory assessments and integration of storage, transportation, and disposal considerations for waste forms managed by other Department offices, such as Environmental Management, Fissile Materials Disposition (NN-60), and Nuclear Energy (Naval Reactors), to ensure consistency with applicable regulatory requirements.
- Provide coordination with Nuclear Regulatory Commission on issues related to the NRC's adoption of DOE's environmental impact statement for a repository at Yucca Mountain.

Strategic Planning 1,020 1,122 1,187

- Respond to program inquiries and links requirements with external program oversight parties and liaison activities with the Department. Support three Program planning workshops. Assist in developing and maintaining Program planning documents, such as the Program Plan. Manage the Memorandum of Agreement with the U.S. Geological Survey for provision of analytical and technical support.

International Waste Management 933 933 933

- Assist in preparing for cooperative bilateral meetings and Nuclear Energy Agency Radioactive Waste Management Committee Meetings. Provide input to the International Nuclear Waste Management Fact Book and update the document *Status of International High-Level Radioactive Waste Management Program*.
- ! Develop and maintain electronic database on international programs.
- ! Assist in the management and oversight of collaborative work with the Russian Academy of Sciences and the Ministry of Russian Federation for Atomic Energy.

Program Management 534 523 655

- Improve program and project management systems. Maintain program management policy document, and support implementation of new Departmental project management policy and requirements.
- Formulate and execute Program budget and annual work plans.
- Establish Program-level cost and schedule baselines and monitor and report the Program baseline performance.

(dollars in thousands)

FY 2001	FY 2002	FY 2003
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Human Resources and Administration **5,838** **5,555** **5,252**

Human Resources Development **20** **20** **30**

- Purchase needed supplies, non-computer equipment, publications, and services.

Audits, Reports, Education, Information and QAMA **1,246** **730** **1,231**

- Develop reports and other documents required by Congress or the Department, such as the Program's Annual Report to Congress, audited financial statements, annual Federal Managers' Financial Integrity Act (FMFIA) reports, responses to General Accounting Office (GAO) and DOE IG audit recommendations, and Freedom of Information Act (FOIA) requests. Manage the Nuclear Waste Fund investment portfolio by providing monthly investment instructions to the CFO for implementation. Comply with executive orders and support the Department's education initiatives by conducting a Historically Black Colleges and Universities (HBCU) Undergraduate Scholarship Program and the Radioactive Waste Management Graduate Fellowship Program. Provide Program information to customers/stakeholders/public through the OCRWM Home Page and publication of *The OCRWM Enterprise*, a semiannual newsletter.

Information Management **4,572** **4,805** **3,991**

- Maintain existing information systems and networks. Validate Information Management (IM) Strategic Plan; revise/update IM Multi-Year Implementation Plan; develop integrated IM Annual Planning Guidance; conduct IM short-range planning and integrated IM budget planning.
- Complete implementation phase 2 of the Integrated Information and Infrastructure Project. This effort completes the re-engineering of the Records Management, Document Management, and Web Publishing processes and initiates the improved processes and associated technology solutions.
- Upgrade telecommunications and basic computing infrastructures.
- Continue the development and implementation of the Program's information architecture to ensure compatibility with the Department's information architecture.

Explanation of Funding Changes from FY 2002 to FY 2003

	FY 2003 vs. FY 2002 (\$000)
<p>Quality Assurance</p> <p>The increase is required to ensure Nuclear Regulatory Commission quality assurance requirements are appropriately incorporated into technical documents; support quality assurance interface within the Program and external to the Program with other DOE high-level waste producing entities.</p>	+518
<p>System Integration</p> <p>The increase supports additional funding to complete additional requirements related to the systems studies, tradeoff studies, sensitivity studies and contingency analyses.</p>	+1,268
<p>Strategic Planning</p> <p>The increase supports additional Program planning requirements received from the Administration, Congress, and the Office of the Secretary into an overall program strategy.</p>	+65
<p>Program Management</p> <p>The increase is required for formulating and executing budgets and annual work plans, establishing Program-level costs, schedules, and technical baseline in support of the Yucca Mountain Site Characterization Office.</p>	+132
<p>Human Resources and Administration</p> <p>The decrease is related to Program activities being completed in FY 2002.</p>	-303
<p>Total Funding Change, Program Management and Integration</p>	+1,680

Program Direction

Mission Supporting Goals and Objectives

Program direction provides overall direction and administrative support for the Office of Civilian Radioactive Waste Program to manage and dispose of the Nation's spent nuclear fuel and high-level radioactive waste. Program Direction has been grouped into five categories: 1) Salaries and Benefits; 2) Travel; 3) Other Related Expenses; 4) Working Capital Fund; and 5) Support Services.

Salaries and Benefits

This element includes compensation for regular salaries and wages paid directly to federal civilian full-time permanent and other than full-time permanent employees, other payments that become a part of the employee's basic pay rate and other personnel compensation such as overtime, holiday pay and cash incentive awards. Benefits includes payments such as the employer's share of employee retirement, health and life insurance, accident compensation, Federal Insurance Contribution Act taxes, and Federal Retirement Thrift Savings Plan. Benefits also include payments for former employees such as severance pay to employees involuntarily separated, and voluntary separation incentives. This includes payments to the unemployment fund, payments of nine percent of final basic pay to the civil service retirement fund for employees who took the early-out or buy-out authority, and payments to the Employees health benefits fund for annuitants.

Travel

This category provides funding for the transportation of Government employees, their per diem allowances while in authorized travel status, and other expenses incidental to travel that are to be paid by the Government either directly or by reimbursing the traveler.

Other Related Expenses

Other related expenses includes funding for building maintenance, rents, communications, utilities, computer/video support, printing and graphics, photocopying, postage, and supplies. The Working Capital Fund was established in FY 1997 by the Office of Human Resources to allocate the cost of common administrative services to the recipient organizations. Activities included in the Working Capital Fund include automated office support, telephone services, postage, printing and graphics, supplies, photocopying, building occupancy, contract closeouts and contract audits.

Support Services

Quality Assurance Technical Support – Provide support in: the establishment and maintenance of NRC required OCRWM QA Program and Policy. Includes developing and maintaining the OCRWM Quality Assurance Requirements and Description, developing QA procedures, and maintaining required QA databases.

Support the performance of independent QA audits surveillance, and review of M&O and other participant products, services, and activities.

Management & Technical Support Services - Provides an independent technical review capability of the work accomplished by the DOE National Laboratories and the management and operations contractor conducting the characterization of Yucca Mountain and the design and licensing of the potential geologic repository. Technical support services include the review and analysis of technical studies and papers and regulatory documents and reports, such as contractor deliverables, Site Recommendation, and License Application. Facilitates independent peer reviews of plans, processes, and predictive models. Provides construction support services to review and analyze the designs and documents supporting licensing and construction. Provides Management services including independent analysis of the managing and operating contractor work plans, schedules and cost estimates.

Specific technical expertise required by OCRWM include environmental, safety and health; NEPA statutory requirements; licensing and NRC statutory framework; design, engineering, design analyses, design basis documents, and process models; scientific programs relating to geology, hydrology, rock mechanics, tectonics, and performance assessments; operations and construction; and project control; procurement analysis, and information management.

Automated Data Processing Support - Provide services to assist in the operation and management of the Office of Civilian Radioactive Waste Management communications network and computer facilities, including Web page development, computer hot line and help desk support, software and hardware installation and maintenance, and early evaluations of enhanced software.

Quality Assurance Management Assessment - Assists OCRWM in the annual quality assurance management assessment to comply with NRC licensing regulations.

Department of Energy Support Services - Provide automated data processing support services for Headquarters.

Technical Analysis Support Services - Process and verify utility fee payment data and develop quarterly revenue projections.

Administrative Support Services - Provide administrative services to the Yucca Mountain Site Characterization Office, including coordination of mail, correspondence, records submittal, office supplies, and facilities management services.

Funding Schedule

(dollars in thousands)

	FY 2001	FY 2002	FY 2003	\$ Change	% Change
Nevada Operations Office					
Salaries and Benefits	564	674	609	-65	-9.6%
Total, Nevada Operations Office	564	674	609	-65	-9.6%
FTEs	6	6	6		0.0%
Other DOE Matrix Support					
Salaries and Benefits	1,303	1,545	1,428	-117	7.6%
Travel	7	7	7	0	0.0%
Total, Other DOE Matrix Support	1,310	1,552	1,435	-117	7.5%
FTEs	15	15	15		0.0%
Headquarters-OCRWM					
Headquarters					
Salaries and Benefits	6,897	7,206	7,884	678	9.4%
Travel	244	260	260	0	0.0%
Working Capital Fund	1,394	1,444	1,571	127	8.8%
Other Related Expenses	156	857	133	-724	-84.5%
Support Services	7,742	10,587	12,784	1,497	14.1%
Total, Headquarters	16,433	20,354	22,632	2,278	11.2%
FTEs	58	58	58		0.0%
Nevada					
Salaries and Benefits	14,928	15,085	17,185	2,100	13.9%
Travel	465	500	500	0	0.0%
Other Related Expenses	2,656	2,000	4,367	2,367	118.4%
Support Services	28,558	18,113	18,603	490	2.7%
Total, YMSCO	46,607	35,698	40,655	4,957	13.9%
FTEs	121	121	132		9.1%
Total Program Direction					
Salaries and Benefits	23,692	24,510	27,107	2,597	10.6%
Travel	716	767	767	0	0.0%
Other Related Expenses	2,812	2,857	4,500	1,643	57.5%
Working Capital Fund	1,394	1,444	1,571	127	8.8%
Support Services	36,300	28,700	31,387	2,687	9.4%
Total, Program Direction	64,914	58,278	65,332	7,054	12.1%
Total, Program Direction Excluding CSRS Adjustment ¹	62,662	56,000	63,287	7,287	13.0%
FTEs	200	200	211		5.5%

¹ Excludes the Government's share of increased costs associated with pension and annuitant health care benefits. Refer to the "Funding Profile" tables for the associated Civil Service Retirement System (CSRS) costs.

Detailed Program Justification

(dollars in thousands)

	FY 2001	FY 2002	FY 2003
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Program Direction	64,914	58,278	65,332
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Salaries and Benefits	23,692	24,510	27,107
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Funds salaries, awards, lump sum leave payments, benefits and buyout compensation for full-time permanent and other than full-time permanent employees. The FY 2003 funding level provides for 211 FTEs, which is 11 more than in FY 2002.

Travel	716	767	767
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Includes all costs of transportation of persons, subsistence of travelers, and incidental travel expenses in accordance with Federal travel regulations which are directly chargeable to OCRWM.

Other Related Expenses	2,812	2,857	4,500
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Includes funding for building maintenance, Yucca Mountain rents, communications, utilities, computer/video support, training, printing and graphics, photocopying, postage, supplies and common administrative services.

Working Capital Fund	1,394	1,444	1,571
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Includes funding for headquarters building maintenance, rents, communications, utilities, computer/video support, printing and graphics, photocopying, postage, supplies and common administrative services.

Support Services	36,300	28,700	31,387
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Includes all costs which are defined as advisory and assistance services acquired by contract from non-governmental services to support or improve the OCRWM organization. This element provides support for the following activities: developing the Environmental Impact Statement Mitigation Action Plan, developing and making available NEPA documentation, complying with NRC requirements, developing and maintaining the Quality Assurance Requirements and Description, developing Quality Assurance procedures, and conducting audits, surveillance, and reviews of M&O and other participant activities. Support services also provide an independent technical review capability of the work accomplished by the DOE National Laboratories and the management and operations contractor. In addition, funds are provided for the operation and management of the communications network and computer facilities.

Explanation of Funding Changes from FY 2002 to FY 2003

FY 2003 vs. FY 2002 (\$000)

Salaries and Benefits +2,597

The increase in salaries and benefits is due to 11 additional FTEs to support activities related to the licensing application, general pay increases, promotions, lump-sum payments, awards, and within-grade increases.

Other Related Expenses +1,643

The increase is due to additional lease-related costs to co-locate YMSCO Program direction personnel with the contractor for collaborative management and administrative consultation.

Working Capital Fund +127

The increase is due to the projected funding profile provided by the Working Capital Fund Board.

Support Services +2,687

The increase is due to computer upgrades required since Microsoft will no longer support Windows 95 and Lotus Notes 4.6X, which are the current program standards at RW. Also, expert technical support for the license application technical documents, Total System Performance Assessment Model validation peer review and Employee Qualification Program, which will assist YMSCO in developing guidance for project-wide training and qualification programs. Additional management and technical support for Systems Engineering, Transportation, and Information Management are needed as the Program moves toward a license application. Additional funding is also required to have the DOE Energy Information Administration (EIA) conduct the Nuclear Fuel Data Survey.

Total Funding Change, Program Direction **+7,054**

Support Services

FY 2001	FY 2002	FY 2003	\$ Change	% Change
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(dollars in thousands)

Headquarters Support Services

Technical Support Services

Technical Support Services (Booz-Allen)	2,062	1,801	2,650	849	47.1%
Technical Analysis (EIA)	290	270	450	180	66.7%
Subtotal, Technical Support Services	2,352	2,071	3,100	1,029	49.7%

Management Support Services

ADP / RSIS East	3,345	3,847	4,497	650	16.9%
HR: Audits, Education, Information & QAMA	335	687	687	0	0.0%
Subtotal, Management Support Services	3,680	4,534	5,184	650	14.3%

Total, Headquarters Support Services	6,032	6,605	8,284	1,679	25.4%
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Quality Assurance Support Services

Quality Assurance (NAVARRO)	7,631	3,982	4,500	518	13.0%
Quality Assurance Mgmt Assessment (QSAI)	380	0	0	0	0.0%
Total, Quality Assurance Support Services	8,011	3,982	4,500	518	13.0%

YMSCO Support Services

Technical Support Services

Project Management (BAH)	11,911	10,494	13,275	2,781	26.5%
ADP / RSIS West	3,345	3,415	3,865	450	13.2%
Environmental Impact Statement (EIS)	5,840	2,941	0	-2,941	-100.0%
Subtotal, Technical Support Services	21,096	16,850	17,140	290	1.7%

Management Support Services

Administrative Support (ALPHA Services)	1,161	1,263	1,463	200	15.8%
Subtotal, Management Support Services	1,161	1,263	1,463	200	15.8%

Total, YMSCO Support Services	22,257	18,113	18,603	490	2.7%
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Total, Support Services	36,300	28,700	31,387	2,687	9.4%
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